A Multi-Analytical Approach to Investigate the Motivations of Sustainable Green Technology in the Banking Industry:
Do Gender and Age Matter?

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ABSTRACT

Sustainability has become the global need for survival in all scopes due to financial development's side effects that have resulted in environmental destruction. The world leaders have proposed green banking (GB) to reduce carbon footprints from banking operations by promoting paperless financial services based on technology. However, the customers' adoption of GB remains unsatisfactory in the UAE. This study attempts to investigate the determinants of consumers' intention adoption of GB. An exploratory sequential mixed-method approach is employed. The qualitative analysis identified six new challenges facing customers' intention adoption of GB: customer awareness, personal innovativeness, bank reputation, security and privacy, system quality, and government support. The qualitative findings are mostly confirmed by quantitative study whereby awareness, personal innovativeness, system quality, and bank reputation significantly impact customers' intention to adopt GB. The study also revealed the insignificant moderating impact of gender and age in most proposed relationships.

KEYWORDS

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INTRODUCTION

Sustainability has become the global need for survival in all scopes due to financial development's side effects that have caused environmental deprivation (Bouteraa et al., 2021a; Bouteraa et al., 2022b). This has resulted in world leaders initiating a sustainable framework for financial development activities to mitigate the severe problems of environmental emissions (United Nations Framework Convention on Climate Change [UNFCCC], 2021). The digitalization of businesses through various Industry Revolution (IR) 4.0 technologies like the Internet of Things (IoT) and Artificial Intelligence (AI) has been proposed as a means to alleviate pressure on the environment and natural resources (Bukhari et al., 2022). However, many emerging economies are trailing behind in environmental unsustainability and lack of digitalization, as such the UAE (Bouteraa, 2020).

Acknowledging digitalization and the environment as a worldwide concern exerted pressure on financial institutions to adopt a green agenda, particularly in the banking industry (Julia & Kassim, 2020). The banking sector is the driving force behind economic sustainability (Lada et al., 2023; Bukhari et al., 2022). It plays a fundamental role in economic growth and is a key consumer financier. Banks may contribute to environmental conservation by incorporating green concepts into their lending and investment practices, diverting customers' attention to environmental management and deploying relevant green technology. Thus, the country's sustainability mainly depends on the greening and digitalizing of the banking industry (Bouteraa et al., 2022b). Consequently, the concept of GB technology has emerged. However, this innovative business ideology is still struggling to be adopted by most developing countries (Bukhari et al., 2022). In particular, the implication of GB technology necessitates the participation of customers as they are the key stakeholders at the forefront of utilizing these measures in their banking transactions (Iqbal et al., 2018; Herath & Herath, 2019). The main objective of this study is to address the challenges facing customers in adopting GB technology.

LITERATURE REVIEW

Green Technology in the Banking Sector

Typically, banks' operational activities are not directly associated with the environment; however, their eco-friendly stance has a considerable external effect on the overall environment (Javeria et al., 2019; Rehman et al., 2021). Traditional banks heavily contribute to carbon emissions through paper use and electricity consumption through extensive networks of branches, apart from financing intermediaries that have an external impact on the environment (Rehman et al., 2021). However, the promotion of GB technology services and green financing can contribute to minimizing the adverse environmental impact to a greater extent (Rehman et al., 2021).

Overall, GB is a banking ideology adopted by the banking sector to inculcate the values of environmental ethics in the daily banking operations and financing portfolio (Bukhari et al., 2022). The operation of GB adoption is context-based, owing to its reliance on the several external aspects existing in the respective countries, the internal capabilities of the banking industry, and other related resources (Shaumya & Arulrajah, 2017). It can be in the form of implementing green management practices, green operations, green buildings, green finance, green technology, promoting green products and services, green marketing, green disclosure (Bukhari et al., 2019) or the digitalization of banking services to reduce the usage of resources such as paper (Bukhari et al., 2022). In this study, GB technology refers to eco-friendly practices that lower carbon footprints from banking operations by promoting technology-based financial services like e-banking, mobile banking, e-fund transfer, e-payment, e-statement and other paperless transactions provided by banks. These innovative financial services promote GB since they reduce paper use and achieve sustainability.

Green Banking in the UAE

The United Arab Emirates (UAE) is considered among the world's highest energy consumers, and the continuous increase in population has escalated demands in energy production, which is essential for economic growth (Juaidi et al., 2016). As natural reserves are limited, sustainable resources are necessary to be explored. Thus, environmental and sustainability have received significant attention from the UAE's government (Dubai Carbon, 2018; UAE-Ministry of Climate Change and Environment [MOCCAE], 2017). According to Stiftung (2019), "with rapid economic growth remaining predominant, it cannot be said that the UAE is currently on a sustainable path". The UAE has recorded a high pollution level and violent $CO2$ emission increase caused by human and business activities (World Bank Group, 2018). This renders the country the world's number one for having the most extensive environmental footprint for a long stand-up period (World-Wide Fund for Nature [WWFN], 2010; Worldatlas, 2019). This is certainly a worrisome situation, especially in this environmentally conscious era.

In this regard, most financial institutions in the UAE seek sustainability. In 2016, the UAE's governors officially inaugurated green initiatives through finance practices (UAE-MOCCAE, 2017). Subsequently, all the financial institutions, including banks, were unanimously invited to formally adopt the green framework(UAE-MOCCAE, 2017). Most banks in the UAE have been extending their services to innovative eco-friendly channels, launching several green initiatives and investing considerable funds to attain sustainability (UAE-MOCCAE, 2017; KPMG, 2020). However, this issue is still a challenging task for the country (UAE-MOCCAE, 2017), which requires substantial efforts by all concerned stakeholders, especially customers, as they are the key stakeholders at the forefront of utilizing these measures in their banking transactions (Iqbal et al., 2018; Herath & Herath, 2019). GB technology is still at a primary stage in the UAE as the adoption level remains unsatisfactory among customers and private businesses (UAE-Ministry of Environment and Water [MoEW], 2017a, 2017b). According to the national survey of UAE-MoEW (2017a), less than 38% of customers have adopted GB technology transactions, and only 4% have a green account. The striking finding is that 59% do not have a future intention to adopt GB services (UAE-MoEW, 2017a). These statistics illustrate that most green services have demonstrated a shallow adoption level. Therefore, this study is motivated to address the issue of customers' low adoption of GB technology in the UAE. This is essential because undermining the importance of this issue might lead to numerous sustainability concerns and cost large financial losses.

The remainder of this study is divided into the following sections. Section 2 presents the theoretical background and research gaps. The methodologies used for both qualitative and quantitative research are presented in Section 3. The results of the qualitative data analysis are then provided in Section 4. Section 5 explains the research model and the hypotheses. The analysis of the numerical quantitative data is presented in Section 6. Finally, Section 7 analyses the research's conclusions and ramifications, as well as its limitations and potential future research directions.

Theoretical Background

Intention behaviour has been examined using theoretical frameworks from various socio-cultural contexts. While existing ones have been and are still being used, validated, modified, or criticized, new ones are evolving to improve the flaws/inadequacies inherent in the existing ones (Izuagbe et al., 2019). Prominent among the theories/models for acquisition insight into individuals' and organizations' predisposition to adopt technology is the Technology Acceptance Model (TAM) and its variants of TAM2 and TAM3, Social Cognitive Theory (SCT), Diffusion of Innovations Theory (IDT), and the UTAUT. Of these frameworks, TAM-based models and UTAUT have been adjudged as the most preferred (Shachak et al., 2019). While UTAUT has been adjudged as the most powerful model to explain the procedure of adopting technologies due to its high explanatory/predictive constructs (Souiden et al., 2020), which derived from the unification of eight powerful models and drawing from their most robust root constructs (Venkatesh et al., 2003; Ghalandari, 2012; Tarhini et al., 2019).

Venkatesh et al. (2003) proposed the UTAUT model after consolidating and testing the variables in eight dominant theories and models: The theory of Reasoned Action (TRA), TAM, Motivation Model (MM), Theory of Planned Behaviour (TPB), a combined TBP/TAM, the model of PC utilization, IDT and SCT. The model identified three constructs: "performance expectancy, effort expectancy, and social influence" that directly influence behavioural intention and two other constructs ", behavioural intention and facilitating conditions", directly affecting technology use. Those relationships were moderated by "age, gender, experience, and use voluntariness". The UTAUT model could explain the variance of 70% in technology acceptance, which outperformed previous models. Since technology forms the basis of GB, it is necessary to understand individual acceptance and use of this technology services under information systems research. This study relied on the UTAUT model as the underpinning framework to address the issue of customers' intention to adopt GB technology.

The UTAUT model has been proven to be strong in studying individuals' adoption within different IT domains (Souiden et al., 2020). When applying the UTAUT model to the context of GB, which involves integrating environmental sustainability practices into financial services, these determinants can provide insights into how individuals and organizations might adopt and utilize environmentally responsible banking practices. Yet, its explanatory power may be limited in specific customer contexts (Tarhini et al., 2016). Venkatesh et al. (2012) claimed that adding new determinants could help expand UTAUT's horizons in a specific consumer context. Against this backdrop, the principal contribution of this study is not only to replicate the UTAUT model in a new context but also to extend it with new individual, technological, organizational, and environmental determinants to form a solid foundation to comprehensively explain customers' intention to adopt GB technology in the UAE as an emerging market. These determinants collectively shape users' intentions and behaviours toward adopting GB practices. By understanding the interplay of these factors, financial institutions can tailor their strategies to effectively promote and encourage the adoption of environmentally sustainable banking services. The following is the linkage between the individual, technological, organizational, and environmental determinants that contribute to the extended research model in the context of GB:

- **Individual Determinants:** Individuals' perceptions play a crucial role in the adoption of GB. Their beliefs about the benefits of environmentally friendly financial services, ease of use, and the relevance of these practices to their personal values influence their intention to adopt such services. An environmentally conscious individual who values sustainable practices is more likely to adopt GB services due to the alignment of their beliefs and values.
- **Technological Determinants:** The technological aspects of GB services, such as the user interface, functionality, and security features, are critical determinants in the adoption process. If individuals perceive the technology as user-friendly, secure, and capable of providing the desired environmental benefits, they are more likely to adopt it. A well-designed and intuitive mobile app for accessing GB.
- **Organizational Determinants:** Organizational factors play a significant role in adopting GB. The support and encouragement from the financial institution and the provision of resources can enhance users' confidence and willingness to adopt these services. Clear communication of the organization's commitment to environmental sustainability through its services and policies can motivate customers to engage in GB practices.
- **Environmental Determinants:** The broader environmental context, including government regulations promoting sustainable practices, can greatly influence the adoption of GB. Environmental factors can create a sense of urgency and legitimacy around adopting environmentally responsible financial services. Regulatory incentives or mandates encouraging banks to offer eco-friendly products can increase the adoption of GB.

Research Gaps

Overall, limited literature exists on determinants of GB adoption (Shaumya & Arulrajah, 2017; Bukhari et al., 2019, 2020). According to the recent systematic literature review by Bukhari et al. (2022), few publications exist on the field of GB adoption. In particular, customers' adoption of GB is not commonly studied (Bouteraa et al., 2020a), which requires a comprehensive exploration (Sahoo et al., 2016; Javeria et al., 2019; Bouteraa, 2020b; Bouteraa et al., 2021). The existing studies primarily investigate the phenomena of GB adoption from an organizational perspective (Mehedi & Kuddus, 2017; Julia & Kassim, 2019; Bukhari et al., 2019, 2020, 2021, 2022). However, few researchers explored customers' challenges in adopting technology (e.g., Iqbal et al., 2018; Iqbal et al., 2019; 2021; Bouteraa et al., 2021).

Customer GB adoption has not been adequately studied due to various limitations on the existing studies (Iqbal et al., 2018; Iqbal et al., 2019; 2021). They largely focus on studying the individual features that reflect the personal attributes of the customers. However, they lack in considering "individual, technological, organizational, and environmental determinants", which form a solid foundation for comprehensively understanding customers' behaviour towards technology (Jeyaraj et al., 2006; Bouteraa et al., 2023). Thus, the literature has identified a need to broadly investigate the determinants of GB adoption.

The demographic factors are equally important moderating factors that affect users' adoption of technology and postulate different perceptions of users (Jain & Rekha, 2017; Suki & Suki, 2017). It was stressed that gender and age play an essential role as moderating variables as they offer a profound understanding of the factors influencing customers' intention behaviour (Venkatesh et al., 2003; Venkatesh et al., 2012). The practical prediction of the moderating effect of demographic groups is necessary because handling the customers as a single set may result in a misleading conclusion. Practically, studying demographic factors allows marketers to collate and ensure the pitching of services to the most relevant target customers with minimal resource waste by formulating dynamic strategies for diverse demographic segments (Stephen, 2020). Rationally, gender differences can influence attitudes and motivations related to technology adoption and environmental concerns. Gender roles, societal expectations, and cultural norms can all shape how individuals perceive and engage with GB services. Typically, women tend to have higher levels of environmental awareness and concern compared to men. Also, different age groups have varying levels of familiarity, experience, and comfort with technology. Younger generations, such as millennials and Gen Z, have grown up with technology and are generally more digitally literate. They are accustomed to using various digital platforms and are likely to be comfortable with online and mobile banking, including GB services accessed through digital channels. However, older Age Groups: Older individuals, particularly those from the Baby Boomer and Silent generations, might be less familiar with advanced technology. They might exhibit varying levels of digital literacy and may need additional support or training to engage with GB services online. Despite the calls for studying the role of demographic factors to attain a deeper understanding of customers' adoption of GB technology (Iqbal et al., 2018; Gupta et al., 2020), there remains a scarcity of evidence on the moderating role of demographic factors as they have been excluded from the tested models of the existing studies (Iqbal et al., 2018; Iqbal et al., 2019, 2021). Consequently, there is a limited in-depth explanation of customers' intention to adopt GB technology. Notably, technology adoption literature has documented a lack of consensus on the influence of gender and age on individual technology adoption (Palau-Saumell et al., 2019; Jayaseelan et al., 2020; Mamonov & Benbunan-Fich, 2020). This implies that they are context-dependent and that the assumptions of their moderating effects should be reformulated based on the settings of each study.

Contextually, the factors influencing GB adoption may vary among contexts (Shaumya & Arulrajah, 2017; Bukhari et al., 2022). The existing studies mainly concentrated on identical settings in their experiments (e.g., Bangladesh, Pakistan or India). Their results may not be applicable in different Middle Eastern regions like the UAE with unique cultural backgrounds, social infrastructure and economic indicators. Hence, identifying the need to conduct country-specific studies on customers'

GB adoption. Regarding their research design, they have mostly adopted a positivism stance by merely conducting cross-sectional surveys to validate an adapted research model. Their determinants were constructed from the syntheses of previous literature and existing theories. Therefore, most models were principally defined as narrow and tactical because they disregarded the exploratory approach and combined the strength of quantitative and qualitative methods within the same study to establish the methodological contributions.

Given the fact that the challenges facing customers towards GB technology are less investigated, unlike the extant literature, this study is motivated to fill these gaps through an exploratory mixed-method approach to comprehensively explore the dimensions of the individual, technological, organizational, and environmental determinants affecting customers' intention to adopt GB technology services in the UAE.

Building on the aforementioned gaps, the study advocates the following research questions (RQs):

RQ1: What challenges affect consumers using green technology based on individual, technological, organisational, and environmental features?

RQ2: What is the effect of individual, technological, organisational, and environmental factors on consumers using green technology in the UAE?

RQ3: What is the moderating effect of gender and age between selected factors and customers' intention to use green technology?

By addressing these RQs, this study is essentially a fresh attempt to look into the obstacles preventing consumers from using green technology by employing a mixed-method approach, extending the UTAUT model by individual, technological, organisational, and environmental, and examining the moderating role of gender and age in the developed research model. The literature can benefit from the contributions made by this study. First, it helps identify the numerous issues affecting consumers' uptake of green technology. Second, it employs and experimentally extends the UTAUT model in forecasting the uptake of green technology. Third, the study uses both qualitative and quantitative approaches in a mixed-method approach, thus paving the way for a clearer understanding of the intricate interrelationships between the elements influencing the uptake of green technology. Lastly, the results of this study provide insightful perspectives for researchers and help managers and policymakers to create successful plans for influencing consumers' greener and sustainable usage behaviour.

RESEARCH METHODOLOGY

The mixed-method approach proposed is adopted to design the research methodology. A mixed-methods approach combines the strengths of the qualitative and quantitative methods within the same study and minimizes both approaches' limitations (Creswell & Creswell, 2018). It permits the researcher to approve, cross-validate and verify findings within a single study from the distinct mechanisms of the research (Creswell & Creswell, 2018; Sekaran & Bougie, 2019).

Thus, this study embraced the exploratory sequential mixed methods designs to investigate the determinants affecting bank customers' intention to adopt GB technology in the UAE. The study first reviewed the relevant literature to broadly view the subject matter. The study identified the likely empirical codes that formed the research's basis using the data collected during the initial stage of the semi-structured interviews. This helped to explore a core set of factors and place the research in a broader context. Sequentially, the study formulated a hypothesis for each empirical code to produce the study's final model. Lastly, the study tested the proposed hypotheses through a quantitative cross-sectional survey on a larger sample to obtain further empirical support for the theoretical framework and generalize the conclusion. To mitigate any potential limitations associated with self-reported data, the researcher employed various strategies, including anonymity and confidentiality, validated and clear

question wording, employing mixed-method approaches to cross-validate data, and acknowledging potential biases in the analysis and interpretation of the results.

Venkatesh et al. (2013) and Venkatesh et al. (2016) addressed the significance of meta-inferences following the acquisition of research findings from the mixed research study, where a meta-inference is theoretical statements or narratives that provide a holistic explanation for an observed phenomenon by combining findings from both qualitative and quantitative studies. Thus, after reviewing qualitative and quantitative investigations sequentially and acquiring research data, this study used the meta-inference analysis to synchronize the findings from these two studies in the last section of the mixed methods research.

Phase One: Qualitative Study

This study conducted a preliminary qualitative phase using semi-structured interviews with open-ended questions with the various managers of different banks in the UAE to explore the essential factors that affect their customers' perception of GB technology. The inductive approach in this case study is employed to discover and classify the determinants from the interview transcripts. Conceptualized interpretations regarding customers' adoption intention of GB technology are developed in a hierarchical structure, with the top-level concepts forming the main factors related to the research objective. Finally, the framework explaining these factors is described in the theoretical narrative.

A Focus group interview is the primary procedure for data collection in this research. The main objective of qualitative research is to gather in-depth insight regarding the issue. Therefore, qualitative research typically embraces non-random sampling (Creswell & Poth, 2018). This study used a purposive sampling technique to select the appropriate informants who are experts on the phenomena under investigation, as recommended by many qualitative scholars (Yin, 2017; Creswell & Poth, 2018; Creswell & Creswell, 2018; Sekaran & Bougie, 2019).

The researchers planned an interview protocol in accordance with the research objective. The interview protocol contains three main sections. The first section is an introduction: the interviewer introduces himself and the purpose of the interview, assures confidentiality, asks permission to record the interview, and gives warm-up questions. The second section consists of the main questions covering the purpose of the interview. This part is developed in a logical order and derived from the research questions with consideration of previous literature. A set of probing questions is prepared for more specific and in-depth information within these questions. The last section includes the concluding instructions to end the interview and thank the informants.

Regarding the qualitative sampling size, most recent qualitative scholars have mentioned that the subjective assessment of the researcher determines the sample size when he/she realizes that the point of saturation has been reached (Yin, 2017; Creswell & Poth, 2018; Creswell & Creswell, 2018; Sekaran & Bougie, 2019). Correspondingly, ten participants from various positions and sites participated in the semi-structured interview, which was sufficient to reach saturation.

The qualitative computer software program NVivo 11 Plus was used for the Thematic Content Analysis (TCA) to analyze the data in transcriptions and identify the codes associated with theoretical underpinning, which formed the research bases. The qualitative data analysis involved the steps presented by Braun and Clarke (2006). These steps include interviewing and recording, listening to recorded tapes, transcribing the recordings, getting respondents to confirm the transcripts, coding the verified transcripts, naming and organizing codes, loading quotations and memos to appropriate codes, analyzing and producing outputs, and lastly, writing the reports.

Phase Two: Quantitative Study

Based on the results of the semi-structured interviews, a number of potential factors were identified that could contribute to customers' GB technology adoption. A set of hypotheses was formulated to produce the study's proposed final model. Afterwards, a quantitative cross-sectional survey was performed among a larger sample of bank customers in the UAE collected through an online survey

to test the proposed hypotheses, validate the results, and generalize the conclusion using Structural Equation Modelling with Partial Least Square (PLS-SEM) and Multi-Group Analysis (MGA) in Smart PLS 4.

Concerning the sample size, the study employed power analysis to determine the minimum sample size due to the absence of the sample frame, as suggested by Creswell and Creswell (2018), Sekaran and Bougie (2019), and Hair et al. (2021). Referring to Cohen's (1988) sample size formula to identify the adequate sample size, the study used G*Power as a function of the standardized significance criterion α, the effect size (ES), the statistical power (1- β), and the number of indicators. By doing so, using G*Power for two tails, medium ES (0.05), α (0.05), power (0.95), and ten predictors, the results indicated a minimum of 242 respondents required to achieve the statistical power of .95 at the significant level of 0.05 (α). Yet, the researcher increased the sample size to 332 to generate more reliable and generalized conclusions.

The electronic questionnaire was developed using Google survey platforms and disseminated in social media, e.g., Facebook and WhatsApp owing to its massive usage among the UAE citizens. This study used a convenience sampling strategy using an online survey for the data collection as it allows reaching the potential maximum number of participants without an extensive recruitment process. An online survey of 53 questions, excluding demography, had been categorized into three sections. Section A describes the purpose of the research. Section B consists of respondents' demographic data, while section C includes measurement items of each variable.

The study developed a survey focusing on the determinants of customers' intention to adopt GB technology. To the extent possible, measurement scales were adapted in prior studies to fit the study's context and ensure the validity of all instruments. All the constructs were measured with multiple items on a five-point Likert scale, with anchors ranging from "strongly disagree" (1) to "strongly agree" (5). The survey items, together with their source, are listed in Table 1. Even though the majority of the UAE's population master the English language. A licensed bilingual translator translated the original instruments into the Arabic language. Then, the Arabic version was edited and translated back into English by a second licensed bilingual translator independently. The equivalence between the back-translated and the source versions regarding their semantic equivalence has been reviewed. Minor discrepancies were found between the source and the back-translated versions. Furthermore, two senior academic experts and one bank practitioner validated the questionnaire to identify any complications with its wording, content, and question ambiguity as a pre-test. The survey was piloted on a small sample of 50 customers at the request of academic experts. Pilot test results were satisfactory, given that the reliability of all buildings exceeded 0.70 (Hair et al., 2019; Shmueli et al., 2016, 2019).

PHASE ONE: QUALITATIVE DATA ANALYSIS AND FINDINGS

The researcher approached several bank professionals to conduct the semi-structured interviews. Eventually, ten individuals agreed to participate in the study, which was sufficient to reach the saturation point. The participants were denoted as P1, P2…P10 to preserve the anonymity of their personal identities. The informants were chosen based on their professional experience in the banking industry, position and expertise in the field of the research study (Table 2).

The qualitative analysis produced six new subthemes: customer awareness and personal innovativeness represent the individual determinant; bank reputation represents the organizational determinant; security and privacy and system quality form the technological determinant; government support represents the environmental determinant (Table 3). The researchers validated the study by requesting some experts in the field to look at the pattern in the data about the associated themes. The following highlighted the findings under each factor and proved by the direct quotes from the informants during the semi-structured interview.

Table 1. Survey items and their sources

Constructs	Description	Items' Code	No Items	Source
Intention Behaviour	Willingness to use innovative high-tech.	INT	4	(Venkatesh et al., 2003)
Performance Expectancy	The system is beneficial and improves task performance.	PE	4	(Venkatesh et al., 2003)
Effort Expectancy	Convenience and usability of using the system	EE	4	(Venkatesh et al., 2003)
Social Influence	The views of relevant parties influence the person's actions regarding system usage.	SI	4	(Venkatesh et al., 2003)
Facilitating Conditions	The availability of resources to support the implementation of a specific technology	FC	4	(Venkatesh et al., 2003)
Customer Awareness	Information regarding a certain technology and the degree of awareness about its presence, idea, purpose, and advantages	AWA	5	(Bouteraa et al., 2023)
Personal Innovativeness	Propensity and inclination to explore and test novel technologies	PI		(Agarwal & Prasad, 1998)
Security & Privacy	the degree of belief and trust in internet-based products and services to transmit sensitive information	S&P	5	(Sura et., 2017)
System Quality	System quality includes comprehensive design of the system, reliability, availability, functionality, and flexibility	SQ	5	(Delone and McLean, 2003; Ahn et., 2007)
Bank Reputation	Overall appeal of an organization to stakeholders in the past actions and prospects compared to the other leading competitors	BR	5	(Nguyen & Leblanc, 2001)
Government Support	The role of government-related authorities in promoting and encouraging the implementation and usage of technology	GS	4	(Amin et al., 2011)

The qualitative data reveals that customer awareness is an essential individual factor in determining their adoption of GB technology, whereas the lack of information regarding availability, importance, concept, knowledge, and benefits is the main barrier. Thus, customer awareness is operationalized in this study as the amount of information about GB technology services and the bank customers' levels of consciousness of its existence, concept, purpose, and benefits. The informants also stressed that the customers hesitate and are unwilling to try out new GB technology because of the absence of an innovative mindset, lack of openness to taking chances, and preference to be in their comfort zone, which has less risk and no hazard or complexities. Such personality attributes might restrict the customers from trying new products and adopting new technologies, as it will require them to change their usual work routines on top of the risk of failure or loss due to the switch to those new GB technology services. Therefore, this study operationalized personal innovativeness as the bank customers' tendency and willingness to try out the new GB technology services.

The frequent technology contributor to the phenomenon was the worry and concern about the security and privacy of the customers' data. The customers' perception of less protection and the fear of illegitimate penetration by various cyber-attacks of privacy stands as an obstacle. This barrier makes adopting GB technology services an intimidating and unapproachable option for bank customers, especially when the internet and high-tech are forming the foundation of GB technology services. Based on the outcomes of the qualitative field, this study operationalizes perceived security and privacy as the degree to which a bank customer believes that the GB technology will be free of security and privacy threats. Another technological factor identified from the content analysis of the transcripts is "system quality". They stressed that customers are very concerned about the

Table 2. Business profile of the participants

S/N	Bank Name	Site/ Location	Current Position	Working Experience in the Current Position	Working Experience in the Current Bank	Highest Qualification
P1	Dubai Bank	Branch/ Dubai	Head of Branch	3 years	8 years	MBA Finance
P2	Abu Dhabi Islamic Bank	Branch/ Abu Dhabi	Head of Branch	2 years	7 years	MBA Finance
P3	Abu Dhabi Islamic Bank	Branch/ Ajman	Head of Branch	4 years	10 years	MBA Finance
P4	Noor Bank	Branch/ Fujairah	Head of Branch	2 years	7 years	MSc Finance and Banking
P5	Abu Dhabi Islamic Bank	HQ/ Abu Dhabi	Regional Manager	1 year	12 years	MBA Finance
P6	Emirates Bank	HQ/ Dubai	Head of the Strategic Planning Unit	2 years	8 years	PhD. Business Management
P7	Emirates Bank	HQ/ Dubai	Junior General Manager	2 years	9 years	MSc Business Management
P8	Dubai Bank	HQ/ Dubai	Sales Executive Manager	3 years	16 years	DBA International Business
P9	Sharjah Bank	HQ/ Sharjah	Marketing Manager	2 years	9 years	MSc Business Management
P10	Sharjah Bank	HQ/ Sharjah	Sales Manager	3 years	10 years	MBA Finance

Table 3. Summary of the qualitative study output

Factors Extracted	Participants										Total Participants	Total (%)
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10		
Customer Awareness	√	√	√	√	√	√	√	√	×	×	08	80%
Personal Innovativeness	√	√	√	×	√	×	√	√	√	×	07	70%
Privacy & Security	√	√	√	√	√	×	×	×	×	√	06	60%
System Quality	√	√	√	√	√	√	×	√	×	×	07	70%
Bank Reputation	×	√	√	×	×	×	√	√	√	×	05	50%
Government Support	√	×	×	√	√	√	×	√	×	√	06	60%

system's comprehensive design, response time speed, and trustworthiness in performing a range of operations consistently and flexibly without interruptions. Thus, system quality refers to the degree to which the comprehensive design of the system, response time, system reliability, system availability, functionality, and flexibility influence the perception of the bank customer regarding the adoption of GB technology services.

The informants frequently referred to the concept of "bank reputation", which implies that customers rely on the bank's status like ranking, size, and tenure in the banking industry, demonstrating its ability, integrity, and goodwill to deliver efficient, beneficial, and reliable services. Such banks have a higher chance of attracting customers to adopt GB technology services and are more likely to be committed to carrying out actions in their favour. Accordingly, bank reputation is operationalized

as the value judgment among the customers about the bank's qualities. The shortage in government support was also highlighted as an environmental dimension to affect customers' adoption of GB technology. The informants stressed that the government is able to create a favourable environment and provide incentives for technology implementation and vice versa. Thus, when adopting financing technology services like GB services, consumers expect to receive support from the government concerning policies, incentives, and subsidies to accelerate the acceptance rate. Accordingly, government support can be operationalized as the role of government-related policies that cover a different set of rules and promotion incentives to adopt GB technology services.

RESEARCH FRAMEWORK AND HYPOTHESES DEVELOPMENT

Based on the output of the qualitative data analysis, the final model of the study was formed. Along with four key constructs of the UTAUT model, six additional factors (customer awareness, personal innovativeness, bank reputation, security and privacy, system quality and government support) are grouped under four generic categories (individual, technology, organization, and environment) to form the study's model presented in Figure 1. All variables hypothesized in this study and their likely relationships have been discussed next.

Performance Expectancy

Performance expectancy predicts consumers' belief in task implementation improvement through technologies (Venkatesh et al., 2003). In a later revision of the model UTAUT2, Venkatesh et al. (2012) reserved performance expectancy as the strongest predictor of user behavioural intention. Performance expectancy has received considerable attention from several researchers (Wiafe et al., 2019; Gupta & Arora, 2019; Do et al., 2020; Bouteraa et al., 2020b; Petersen et al., 2020). These studies imply that performance expectancy is a key construct to enhance information systems' usage. Remarkably, the practicality of GB technology can only be captured by the extent to which it can

Figure 1. Final research framework
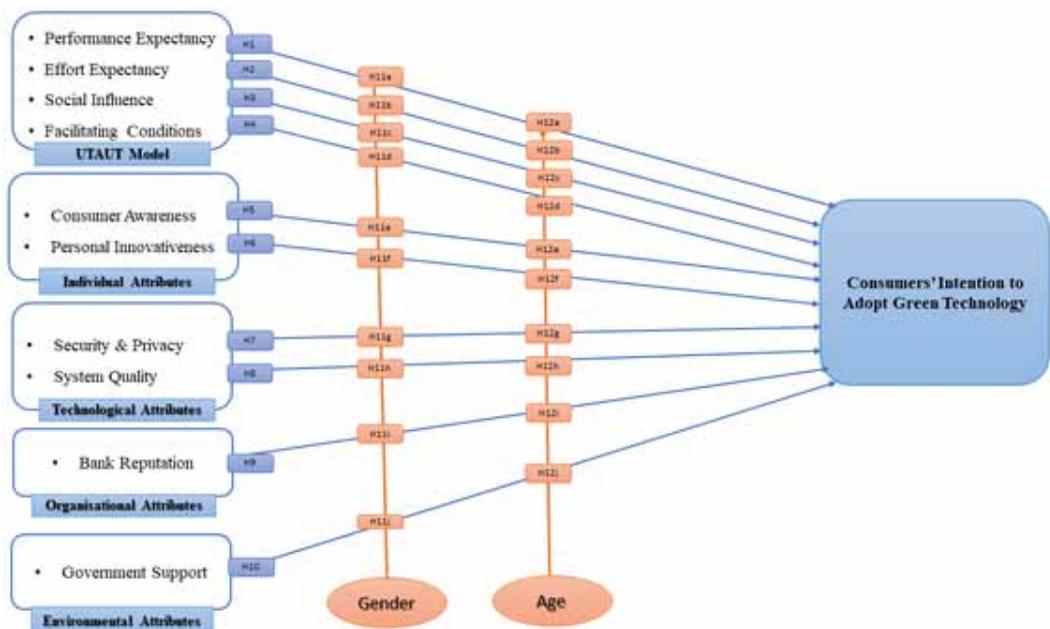
meet the expectations of the clients (Rifat et al., 2016; Iqbal et al., 2018; Iqbal et al., 2019). Thus, if customers perceive that GB technology will contribute meaningfully to enhancing their financial performance, they may be favourably disposed to adopt them. In keeping with the literature and the UTAUT model, which asserted that IT-based products or services improve job performance and offer many facilities in the form of efficiency, usefulness, effortless and timeliness transactions, this study anticipates that performance expectancy will describe consumers' intention to adopt GB technology. This argument led to the first hypothesis:

H1: Performance expectancy positively affects customers' intention to adopt green technology.

Effort Expectancy

According to Venkatesh et al. (2003), effort expectancy measures people's level of convenience when using specific information technology. The literature documented inconsistent results regarding the output of effort expectancy towards technology behaviour. Many studies reported a significant influence of effort expectancy on consumers' intentions (Karjaluoto et al., 2019; Alabdullah et al., 2020). Similar findings in the context of GB technology (Rifat et al., 2016; Iqbal et al., 2018). On the contrary, several empirical studies claimed that effort expectancy is not a critical determinant (El-Masri & Tarhini, 2017; Mensah, 2020). These inconsistent conclusions motivate re-examining the effect of effort expectancy on the customers' intention to adopt GB technology in the UAE. The UTAUT model anticipated that customers might not refrain from using IT-based services that are convenient and useful for conducting financial transactions. This offers sufficient effort expectancy to describe the consumers' intention to adopt GB technology. This study sets up the second hypothesis:

H2: Effort expectancy positively affects customers' intention to adopt green technology.

Social Influence

According to numerous theories and models like TRA, TBP, TAM and UTAUT, social influence is a core determinant of behavioural intention. Social influence refers to the extent to which the individual's technology usage is affected by others' opinions (Venkatesh et al., 2003). The idea behind social influence is that even though a person may not support technology, they intend to use it because of the belief it will raise his/her image among peers (Venkatesh & Davis, 2000). Many empirical IT adoption studies have found that social influence plays a vital role in users' intention behaviour (Al-Saedi et al., 2020; Flavian et al., 2020). However, this later conflicted with other investigations that did not report significant proof (Raza et al., 2019; Handarkho, 2020; Purwanto & Loisa, 2020; Abbasi et al., 2021). Similarly, GB technology adoption literature documented inconsistent conclusions regarding the role of social influence. A study by Rifat et al. (2016) confirmed the positive effect of social influence. Conversely, Iqbal et al. (2018) reported that social influence is not essential in explaining customers' intention to adopt GB technology. These inconsistent conclusions imply that social influence is a context-dependent factor, thus motivating the examination within the context of this study. Based on the UTAUT model, it can be inferred that trendy technology services offer a load of the social influence construct to influence the customers' intention to adopt GB technology. Hence, the hypothesis is as follows:

H3: Social influence positively affects customers' intention to adopt green technology.

Facilitating Condition

Facilitating condition is the availability of resources for users to support the implementation of a specific technology (Venkatesh et al., 2003). The UTAUT identifies facilitating condition as a construct

reflecting a person's perception of control over their behaviour (Venkatesh et al., 2008). Although the original UTAUT did not show a direct association between facilitating condition and behavioural intention, the extended UTAUT2 by Venkatesh et al. (2012) validated its direct effect. The literature stressed the importance of facilitating conditions as a vital predictor of intention to use a wide range of technologies (Wang et al., 2020; Jahanshahi et al., 2020). The synthesis of GB technology studies demonstrated a definite agreement regarding the importance of facilitating conditions in capturing consumer intention behaviour (Iqbal et al., 2018; Iqbal et al., 2019; Nisha et al., 2020). Despite the importance of facilitating conditions in GB technology adoption models, there remains a lack of evidence from customers in the UAE as a Middle Eastern region with unique social and economic structures. The practical notion of facilitating conditions is that when customers have sufficient supporting resources such as knowledge, easy access to the internet and smart devices, and being guided by experts, they may develop a positive perception. Hence, the hypothesis is formulated:

H4: Facilitating condition positively affects customers' intention to adopt green technology.

Customer Awareness

Awareness is essential in the innovation adoption process (Guiltinand & Donnelly, 1983). The likelihood of innovation increases by providing additional information on technology characteristics (Rogers, 1983). People who are well-informed about a particular service will ultimately become more aware of it and will be motivated to support it (Lujja et al., 2018). On the other hand, the lack of awareness about the benefits, advantages and disadvantages acts as a barrier to technology acceptance (Pai & Alathur, 2019). Various researchers highlighted concern about the ability of awareness to influence customer intention behaviour (Chaurasia et al., 2019; Singh & Sinha, 2020; Baabdullah, 2020; Bouteraa & Al-Aidaros, 2020). This implies that providing more information on specific innovation attributes like GB technology might positively affect adopters' decisions. Despite the intensive discussion of awareness in the adoption literature, a lack of studies addressed this crucial variable in customers' intention to adopt GB technology. Considering the belief of the informants in the qualitative study and the above discussion, it can be predicted that consumers with high awareness are more inclined to adopt GB technology. Hence, the hypothesis can be formulated:

H5: Customer awareness positively affects customers' intention to adopt green technology.

Personal Innovativeness

Diffusion theory asserts adopters optimistically anticipate new technologies (Rogers, 1995). Optimistic attitudes on technology acceptance positively control user satisfaction (Khan & Ullah, 2014), promoting innovativeness and enhancing technology usage behaviour (Khan et al., 2019). Agarwal and Prasad (1998) have proposed personal innovativeness specifically for the technology field, which they defined as "the willingness of an individual to try out any new information technology". Even though personal innovativeness was initially introduced as a moderator (Agarwal & Prasad, 1998), it was also theoretically and empirically a key antecedent in innovation adoption (Thakur et al., 2016). The findings of many IT adoption studies have shown that personal innovativeness is a significant factor in behavioural intention (Cao et al., 2019; Lee, 2019; Bervell et al., 2020; Abbasi et al., 2021). Despite the rigorous investigations on personal innovativeness, limited studies examined the effect of this factor on customers' intention to adopt GB technology. Based on the anticipation of the informants in the qualitative investigation and the literature, the following hypothesis can be formulated:

H6: Personal innovativeness positively affects customers' intention to adopt green technology.

Security and Privacy

New technologies' growing capacity for information processing and integration into consumers' daily lives has made security and privacy increasingly important. Consumers are unwilling to accept that they do not have complete control over their behaviours (Pikkarainen et al., 2004) because their insecurity perception increases regarding how their personal data is being gathered and processed (Flavián & Guinalíu, 2006). Yoon et al. (2020) stressed that security and privacy are conditional concerns of technology adoption. Security and privacy forecast a broad range of behavioural and attitude outcomes. For instance, people with high perceived security and privacy are more likely to use new financial systems (Merhi et al., 2019) and exhibit higher levels of e-Satisfaction (Alalwan et al., 2019) and service choice (Deb et al., 2019). Contrary to these studies, Chatterjee (2020) claimed that users in specific contexts may not be concerned regarding the issue of security and privacy while adopting new technology. Yet, this construct is rarely examined in the field of customers' intention to adopt GB technology. Considering GB technology services necessitate high-security measures to protect users' private data, along with the anticipation of the qualitative phase, it can be concluded that security and privacy will determine customers' intention to adopt GB technology. Consequently, the following hypothesis is proposed:

H7: Security and privacy positively affect customers' intention to adopt green technology.

System Quality

System quality is one of the strategic elements in the original IS success model (DeLone & McLean, 1992) and the revised model (Delone & McLean, 2003), which is necessary for the production output of the information processing system. The system's quality focuses on a system's technical level of success concerning information production (DeLone & McLean, 1992). It is related to the software and data components and is used to measure the soundness of the technical aspects of the system (Gorla, 2011). System quality centres on customers' perception of information retrieval and service delivery (Ngoc-Duy & Thi-Dai, 2018). Usability, availability, reliability, adaptability, accessibility, and response time are system qualities demanded by users (Delone & McLean, 2003). The literature stressed that system quality is a vital predictor of intention to use a wide range of technologies (Zhang et al., 2020; Sensuse et al., 2021; Anggreni et al., 2020; Albashrawi et al., 2020). However, the system quality is rarely inspected in the field of GB technology. Consistent with the informants' anticipation in the qualitative study and the above arguments, technology-based services like GB technology necessitate a comprehensive system design, speed response time, and trustworthiness in flexibly performing a range of operations without interruptions, entailing a significant weight of system quality to affect customers' intention to adopt GB technology. Consequently, the following hypothesis is posited:

H8: System quality positively affects customers' intention to adopt green technology.

Bank Reputation

Reputation is one of the most imperative intangible assets of a corporation built through its believability and credibility in actions over time (Nguyen & Leblanc, 2001), which predominantly affects customers' behaviour (Helm et al., 2010). Corporate reputation is the overall appeal of an organization to stakeholders in the past actions and prospects compared to the other leading competitors (Fombrun, 1996). Customers are very much concerned about the company's reputation to form their overall perception, including behavioural intention, satisfaction, loyalty (Ikhsan & Simarmata, 2021; Islam et al., 2021) and trust (Stravinskienė et al., 2021). Numerous studies have demonstrated the significant role of reputation in predicting technology acceptance (Chaudhary, 2019; Mijoska et

al., 2020; Picoto & Pinto, 2021). However, less consideration was given to the effect of the bank's reputation on customers' intention to adopt GB technology. Consistent with the anticipation of the output of qualitative inquiry and the extant literature, which implies that customers rely on the bank's status, i.e., its ability, integrity, and goodwill to deliver efficient, beneficial, and reliable services, it is reasonable to anticipate that customers are likely to adopt GB technology. Thus, it is hypothesized that:

H9: Bank reputation positively affects customers' intention to adopt green technology.

Government Support

Government support is one environmental factor influencing adoption in the TOE framework (Tornatzky & Fleischer, 1990). The government has a virtuous standing in increasing the credibility and reliability of services by improving the promotion of technology applications in financial innovation and investing in infrastructure, making consumers feel more secure in using particular financing services (Hu et al., 2019). Empirical conclusions found a significant association between government support and consumers' intention to adopt technologies (Hu et al., 2019; Haleem et al., 2019; Cha et al., 2020). On the contrary, there is overwhelming support for studies that claim that government support is the least important factor (Marakarkandy et al., 2017; Sánchez et al., 2018; Maryam et al., 2019). This indicates that government support is a country-specific and context-dependent determinant. Nevertheless, there is a lack of existing research regarding the relationship between government support and customers' intention to adopt GB technology services in the UAE. The rationale behind government support as a determinant to explain customers' intention to adopt GB technology is that government encouragement, promotions, and provision of guaranteed incentives could help the customers consider the transactional condition of GB technology. The preliminary qualitative field and the above discussion provided a reference for this research to predict that government support will impact consumers' intention to adopt GB technology. Therefore, it hypothesized the following:

H10: Government support positively affects customers' intention to adopt green technology.

Gender and Age as Potential Categorical Moderators

Demographic factors are the socioeconomic characteristics expressed statistically to define a person or a population (PayrollHeaven, 2020). These typically include age, gender, level of education, amount of income, marital status, occupation, and religion. Several empirical studies confirmed that demographic factors like gender and age are valid moderating variables that affect users' adoption of technology and postulate different perceptions of users (Jain & Rekha, 2017; Suki & Suki, 2017). Specifically, the original UTAUT model by Venkatesh et al. (2003) and the extended UTAUT-2 by Venkatesh et al. (2012) made a reference to demographic variables differences regarding IT adoption behaviour.

Rationally, gender differences can influence attitudes, behaviours, and motivations related to technology adoption and environmental concerns. Gender roles, societal expectations, and cultural norms can all shape how individuals perceive and engage with GB services. Typically, women tend to have higher levels of environmental awareness and concern compared to men. Women often prioritize sustainability and social responsibility in their decisions. Understanding how gender influences these concerns can provide insights into how different gender groups might perceive and value the environmental benefits of GB services. Age is a critical demographic factor influencing technology adoption and attitudes toward environmentally responsible practices. Different age groups have varying levels of familiarity, experience, and comfort with technology and distinct perspectives on environmental issues. Age-related differences in values, priorities, and financial behaviours can shape how individuals approach GB services. Younger generations, such as millennials and Gen Z, have grown up with technology and are generally more digitally literate. They are accustomed to using various digital platforms and are likely to be comfortable with online and mobile banking, including

GB services accessed through digital channels. However, older Age Groups: Older individuals, particularly those from the Baby Boomer and Silent generations, might be less familiar with advanced technology. They might exhibit varying levels of digital literacy and may need additional support or training to engage with GB services.

Practically, studying demographic factors allows marketers to collate and ensure that the services are pitched to the most relevant target customers with minimal resource waste formulating dynamic strategies for different demographic segments (Stephen, 2020). However, although there is a call for important initiatives to study the role of demographic factors for a deeper understanding of customers' adoption of GB technology (Iqbal et al., 2018; Gupta et al., 2020), there remains a scarcity of evidence on their moderating role. Furthermore, technology adoption literature documented a lack of consensus on the influence of gender, age and experience (Palau-Saumell et al., 2019; Jayaseelan, Koothoor, & Pichandy, 2020; Mamonov & Benbunan-Fich, 2020); which implies that they are context-dependent and that the assumptions of their moderating effects should be reformulated based on the settings of each study. Consequently, there is a limited in-depth explanation from a demographic perspective. Concerning the demographic discrepancies, this study examines the moderating effect of gender and age in the proposed research model relationships and customers' intention to adopt GB technology. Correspondingly, the following hypothesises are proposed:

H11a to H11g: Gender moderates the relationships in H1 to H10 (There is a significant difference between Males and Females).

H12a to H12g: Age moderates the relationships in H1 to H10 (There is a significant difference between Young and Old).

PHASE TWO: QUANTITATIVE DATA ANALYSIS AND RESULTS

Sample Description

The descriptive statistics analysis was applied using IBM-SPSS v.28 to discover the missing values. The results showed that there were no missing values. However, as per the standard approach to detect multivariate outliers by computing the squared Mahala-Nobis distance at $p < .001$ for each case in the data set, out of 338, only 6 cases were reported to be multivariate outliers and should be omitted (Tabachnick & Fidell, 2013). Thus, leaving a final sample size of 332 valid cases for the actual data analysis. The summary of the sample's demographic statistics is displayed in Table 4.

Assessment of Measurement Model

The measurement model was performed by evaluating reliability (composite reliability-CR), convergent validity (Factor loadings and average variances extracted - AVE) and discriminant validity (Hetrotrait-Monotrait-HTMT) (Hair et al., 2019). Table 5 findings show that the factor loadings, AVE and CR exceed the suggested values, i.e., 0.70, 0.5 and 0.7, respectively (Shmueli et al., 2016, 2019; Hair et al., 2019; Hair et al., 2021). the common method bias, which might occur in survey data, is also examined using Harman's single-factor test to mitigate any potential limitations associated with self-reported data. The results show a value of 37%, less than 50%. This indicates that the data does not have common method bias (Podsakoff et al., 2003).

This study also assessed discriminant validity by applying HTMT ratios (Kline, 2016). Results in Table 6 reveal that all the HTMT values of all constructs were lower than 0.85 (Henseler et al., 2015). Accordingly, no issues related to the discriminant validity. This leads to the conclusion of the validation of the measurement model.

Table 4. Demographic information of sample N=332 (100%)

Variable	Category	Frequency	Percentage
Gender	Male	217	65.4%
	Female	115	34.6%
Age	18 to 39 years	209	63%
	40 years and above	123	37%
Education level	College Diploma	28	8.4%
	First Degree (Bachelor)	130	39.2%
	Professional certificate	62	18.7%
	Others	5	1.5%
Occupation	Professional, e.g., lawyer, Doctor, engineer	148	44.6%
	Manager/ Executive	38	11.4%
	Academician	34	10.2%
	Student	28	8.4%
	Merchant/Businessman	77	23.2%
	Unemployed	4	1.2%
	Others	3	0.9%

Assessment of Structural Model

Even though discriminant validity has been met in the outer model assessment, lateral collinearity issues might lead to statistical instability or/and inaccurate results (Hair et al., 2017; Hair et al., 2018). Therefore, it was decided to be investigated. A Variance Inflated Factor (VIF) value of 5 or greater indicates potential collinearity matter (Hair et al., 2011; Shmueli et al., 2016, 2019; Hair et al., 2021). The findings of this study presented in Table 7 confirm no apprehensions on the multi-collinearity as all the VIF values were lower than 5.

Subsequently, structural model analyses were performed to test the study's formulated hypotheses. Table 7 reveal the results of the hypotheses. The model's factors generated R^2= 72.2% of the variance towards behaviour intention, which substantially permits the criteria specified by many scholars (Shmueli et al., 2019; Hair et al., 2019; Hair et al., 2021). The effect size (f^2) shows that most variables have small to medium effect sizes according to the criteria specified by Cohen (1992).

This study incorporated gender and age as a categorical moderators. The data was split into groups (Gendre: male and female) and (Age: young and Old). Subsequently, they were estimated separately for each data group by running the permutation and PLS-MGA algorithms (Table 8). When engaging in MGA, the minimum sample size in each group should be determined to meet the rule of thumb. According to Henseler et al. (2016), a minimum of 64 observations per group was needed to detect R^2 values of about 0.25 at a significance level of 5% and a power level of 80%. In this study, the group-specific sample sizes for both gender: male (n = 217) and female (n = 115) and Age: young (n = 209) and old (n = 123), thus considered acceptable.

This study assessed PLS Predict to further validate the predictive relevance of the model. PLS predict is a set of procedures proposed by Shmueli et al. (2016) that permitted the study to measure the out-of-sample prediction, which involves estimating the model on an analysis sample and evaluating its predictive performance on data other than the analysis sample (Shmueli et al., 2019). For this study, PLS predict is used to compute the case-level predictions of PLS predict with k = 10 as set by Hair et al. (2019) and Shmueli et al. (2019). The findings show that all the Q^2 predict values are larger

Table 5. Summary results of convergent validity and reliability

Constructs	Indicators	Loadings	CR	AVE
Intention	IN1	0.819	0.966	0.802
	IN2	0.828		
	IN3	0.942		
	IN4	0.932		
	IN5	0.939		
	IN6	0.927		
Performance Expectancy	PE1	0.830	0.897	0.687
	PE2	0.906		
	PE3	0.817		
	PE4	0.755		
Effort Expectancy	EE1	0.869	0.884	0.658
	EE2	0.743		
	EE3	0.753		
	EE4	0.871		
Facilitating Conditions	FC1	0.742	0.895	0.632
	FC2	0.842		
	FC3	0.833		
	FC4	0.840		
	FC5	0.705		
Social Influence	SI1	0.834	0.900	0.693
	SI2	0.895		
	SI3	0.882		
	SI4	0.705		
Personal Innovativeness	PI1	0.844	0.888	0.665
	PI2	0.734		
	PI3	0.801		
	PI4	0.876		
Customer Awareness	AW1	0.852	0.924	0.710
	AW2	0.787		
	AW3	0.896		
	AW4	0.878		
	AW5	0.793		
System Quality	SQ1	0.720	0.902	0.609
	SQ2	0.877		
	SQ3	0.802		
	SQ4	0.824		
	SQ5	0.849		
	SQ6	0.568		

Table 5. Continued

Constructs	Indicators	Loadings	CR	AVE
Bank Reputation	BR1	0.905	0.934	0.738
	BR2	0.837		
	BR3	0.865		
	BR4	0.812		
	BR5	0.873		
Security and Privacy	SP1	0.884	0.905	0.704
	SP2	0.850		
	SP3	0.828		
	SP4	0.790		
Government Support	GS1	0.857	0.951	0.794
	GS2	0.858		
	GS3	0.924		
	GS4	0.925		
	GS5	0.889		

Note: All factor loadings are significant at $p < 0.05$

Table 6. Heterotrait-monotrait ratio (HTMT)

	AW	BR	EE	FC	GS	IN	PE	PI	SI	SQ	SP
AW											
BR	0.377										
EE	0.505	0.394									
FC	0.551	0.619	0.729								
GS	0.203	0.624	0.323	0.558							
IN	0.680	0.367	0.567	0.651	0.305						
PE	0.578	0.451	0.694	0.652	0.298	0.847					
PI	0.785	0.473	0.385	0.486	0.323	0.600	0.475				
SI	0.352	0.614	0.568	0.753	0.530	0.493	0.524	0.317			
SQ	0.611	0.648	0.641	0.784	0.523	0.678	0.708	0.471	0.651		
SP	0.557	0.574	0.486	0.656	0.372	0.596	0.643	0.419	0.571	0.845	

than zero (Q^2 predict > 0), indicating that all the indicators had outperformed the LM benchmark. This allows for the subsequent comparison of the RMSE values with the naïve LM benchmark. The comparison results between PLS-SEM and LM indicate that a majority of the indicators (4 out of 7) in the PLS-SEM analysis yield smaller prediction errors compared to the LM (PLS-SEM<LM) (Table 9). This means that the study's model has medium predictive power, as set by Shmueli et al. (2019). This statistically implies that the model can accurately predict the responses out of the sample and its ability to generate testable predictions in various technology adoption.

Table 7. Path coefficients, hypotheses testing, and effect size

Relationship	H	Std.β	t- Statistics	P-value	Confidences Interval		Decision	VIF	(ƒ²)
					Lower	Upper			
Performance Expectancy > Intention	H1	0.496	12.446	0.000	.413	.571	Supported	2.132	0.420
Efforts Expectancy > Intention	H2	-0.002	0.096	0.923	-.092	.096	Not Supported	2.265	0.003
Social Influence > Intention	H3	0.043	1.038	0.299	-.033	.116	Not Supported	2.000	0000
Facilitating Condition > Intention	H4	0.122	2.713	0.007	.035	.208	Supported	2.763	0.014
Customer Awareness > Intention	H5	0.259	5.515	0.000	.164	.348	Supported	3.027	0.082
Personal Innovativeness > Intention	H6	0.155	2.709	0.007	.037	.263	Supported	2.077	0.035
Security & Privacy > Intention	H7	0.070	1.433	0.152	-.028	.173	Not Supported	2.737	0.003
System Quality > Intention	H8	0.169	2.685	0.007	.042	.291	Supported	3.499	0.028
Bank Reputation > Intention	H9	0.158	3.472	0.001	.248	.074	Supported	2.068	0.043
Government Support > Intention	H10	0.029	0.782	0.434	-.052	.102	Not Supported	1.690	0000

Table 8. PLS-MGA analysis of age and gender

Relationship	H	Young (N=209)			Old (N=123)			PLS-MGA	Decision
		β	Std Error	t-Value	β	Std Error	t-Value	t-Value (Young vs. Old)	
Performance Expectancy > Intention	H11a	.449	.048	9.262***	.474	.211	2.245*	.174	Rejected
Efforts Expectancy > Intention	H11b	.128	.064	2.089*	-.158	.170	.930	1.949	Rejected
Social Influence > Intention	H11c	.428	.063	6.787***	.656	.049	13.314***	2.441***	Supported
Facilitating Condition > Intention	H11d	.157	.086	1.825	.004	.099	.042	.879	Rejected
Customer Awareness > Intention	H11e	.416	.061	6.777***	.665	.046	12.111***	2.381***	Supported
Personal Innovativeness > Intention	H11f	.040	.054	.753	.065	.103	.634	.235	Rejected
Security & Privacy > Intention	H11g	-.006	.056	.099	-.123	.099	1.242	1.122	Rejected
System Quality > Intention	H11h	.055	.052	1.070	.224	.069	3.226**	1.939	Rejected
Bank Reputation > Intention	H11i	-.006	.056	.099	-.123	.099	1.242	1.122	Rejected
Government Support > Intention	H11j	.128	.064	2.089*	-.158	.170	.930	1.949	Rejected
Relationship	H	Male (N=217)			Female (N=115)			PLS-MGA	Decision
		β	Std Error	t-Value	β	Std Error	t-Value	t-Value (Male vs. Female)	
Performance Expectancy > Intention	H12a	.225	.061	5.766***	.634	.099	11.234***	3.005***	Supported
Efforts Expectancy > Intention	H12b	.040	.054	.753	.065	.103	.634	.235	Rejected
Social Influence > Intention	H12c	-.006	.056	.099	-.123	.099	1.242	1.122	Rejected
Facilitating Condition > Intention	H12d	.055	.052	1.070	.224	.069	3.226**	1.939	Rejected
Customer Awareness > Intention	H12e	-.006	.056	.099	-.123	.099	1.242	1.122	Rejected
Personal Innovativeness > Intention	H12f	.128	.058	3.209***	.677	.057	8.201***	1.994***	Supported
Security & Privacy > Intention	H12g	.157	.086	1.825	.004	.099	.042	.879	Rejected
System Quality > Intention	H12h	.128	.064	2.089*	-.158	.170	.930	1.949	Rejected
Bank Reputation > Intention	H12i	.356	.098	5.756***	.456	.087	7.319***	4.321***	Supported
Government Support > Intention	H12j	.055	.052	1.070	.224	.069	3.226*	1.939	Rejected

Table 9. Assessment of q^2 predict and the predictive performance of the PLS model vs. benchmark LM

Indicators	PLS Predict		LM predict		(PLS-LM)
	RMSE	Q^2 Predict	RMSE	Q^2 Predict	RMSE
INT7	0.691	0.561	0.653	0.608	0.038
INT4	0.511	0.634	0.498	0.653	0.013
INT3	0.537	0.613	0.565	0.572	-0.028
INT6	0.543	0.602	0.533	0.617	0.01
INT2	0.628	0.417	0.586	0.494	0.042
INT1	0.685	0.459	0.720	0.403	-0.035
INT5	0.540	0.635	0.575	0.586	-0.035

Note: Intention = INT; Root Mean Squared Error = RMSE; Linear Model LM

DISCUSSION AND CONCLUSION

Meta-Inference

To evaluate the study findings, meta-inference is employed in conjunction with the bridge strategy to establish consensus between qualitative and quantitative findings (Venkatesh et al., 2013; Venkatesh et al., 2016). The qualitative data analysis reveals that customer awareness and personal innovativeness are vital factors that could improve their adoption of GB technology. The qualitative results also indicate that the technology features of GB technology might become barriers, and the most influential factor could be security, privacy, and system quality. The informants also highlighted during the interviews that the value judgment among the customers about the bank's qualities (i.e., reputation) is a constraining factor from an organizational motivation force or barrier for customers. Furthermore, government-related policies, regulations, and incentives have been identified as crucial environmental barriers influencing customers' intention adoption of GB technology. The preliminary qualitative findings are confirmed mainly by quantitative data analysis whereby customer awareness, personal innovativeness, system quality, and bank reputation significantly impact customers' intention to adopt GB technology. However, the effects of security and privacy and government support are insignificant.

As an inference, the study results show that most qualitative findings can be generalized through quantitative research. This implies that the mixed method approach effectively connects the qualitative and quantitative research gap and synchronizes the virtues of both research methods. The empirical outcomes in both research approaches can also be cross-referenced to enrich the understanding the issue under study. Thus, the mixed research method of this study provides a more in-depth insight into customers' GB adoption intention than a single-method approach.

Discussion

This study reveals that the sustainable qualities of GB technology, such as efficiency, saving time, and usefulness in managing finances (i.e., performance expectancy), along with the availability of the required technical resources for users (i.e., facilitating condition), can contribute to increasing the customers' intention adoption of GB technology with significant effect size. These results align with the UTAUT model and previous literature (Iqbal et al., 2018; Iqbal et al., 2019; Wang et al., 2020; Jahanshahi et al., 2020). Contrary to the UTAUT model, effort expectancy is found to be insignificant. This interprets that customers do not judge the importance of GB technology based on convenience, easiness of learning, interaction, and proficiency. Such behaviour might be related to their lack of innovativeness and hesitation to experience new services. These findings could also be associated with some societal attributes and the values shaping individuals' perceptions (Venkatesh & Zhang,

2010). Similarly, this study established an insignificant effect of social influence. This finding may explain that financial matters are regarded as a solo act and private to users, which rationalizes the limited sharing of information with peers and lessens the impact of social pressure. Another possible explanation for this result is generation Y, to which most of the respondents in the sample of this study are young people (18 - 39 years old) who were born and have grown in the age of technologies, and one of the characteristics of this generation is more "self-directed" than previous X generations (Abbasi et al., 2021).

This study also reveals that individual determinants like customer awareness significantly affect the customers' GB adoption intention in both investigation phases. This signifies that empowered people will likely find GB technology meaningful in managing their financial tasks efficiently. Prior knowledge and well-informed interest regarding GB technology's existence, moral concept, objectives, and wide benefits would positively shape the customer's adoption intention. This result is consistent with the literature (Chaurasia et al., 2019; Singh & Sinha, 2020; Baabdullah, 2020). Personal innovativeness is equally a fundamental individual element to be significantly related to customers' intention to adopt GB technology with a considerable predictive relevance. According to qualitative and quantitative outputs, customers with higher levels of innovativeness are expected to develop more positive beliefs towards GB technology and vice versa. Thus, the personal innovativeness of customers is a substantial enabler in addressing the issue of low GB technology adoption. This conclusion supports the existing studies (Lee, 2019; Cao et al., 2019; Bervell et al., 2020).

The bank professionals perceived that security and privacy are essential for improving customers' intention to adopt GB technology. However, customers have denied this perception during the quantitative phase as security, and privacy is not significant concern to the UAE's customers. This optimistic perception among customers could be attributed to the high secrecy law and the solid infrastructure of the banking industry in the UAE, which is among the world's top reputable and well-structured. Furthermore, the less anxiety of customers about imminent security risks and privacy violations could be related to desensitization, where society is accustomed to living and working in a compromised environment. On the contrary, customers are very concerned about the system's quality. Thus, it can be understood that the capabilities and robustness of the design attract customers. This is consistent with the literature that indicates when the quality improvement of a particular technology system exists, a weighty impact on the customers' intention will be a positively resultant (Zhang et al., 2020; Sensuse et al., 2021; Anggreni et al., 2020).

Bank reputation is also revealed as having a significant impact on customers' intention to adopt GB technology in both study phases. This implies an excellent reputation means the bank is perceived to provide reliable GB technology to be integral and good-willed. Customers' intention for GB technology services with a higher selection risk would be more significant. The elevated potential adverse effects resulting from an error in choosing service providers have led customers to rely heavily on the organization's reputation in the market. Thus, customer intention is primarily motivated by the prestigious and attractive name of the bank in the market. This supports the literature that infers bank reputation as an intangible organizational enabler of consumer technology adoption (Sridhar & Mehta, 2018; Mijoska et al., 2020; Balakrishnan & Foroudi, 2020; Picoto & Pinto, 2021).

Bank professionals during the qualitative perceived that government support would increase the customers' intention to adopt GB technology. However, customers did not feel that the involvement of the UAE's government had any effect on their intention. The possible explanation is that the policies implemented by the government have been ineffective, or users may consider them irrelevant to their decision to use these services. Another likely interpretation is that the UAE banks are primarily private and have distanced themselves from the customer's government policies. Notably, the UAE's economic freedom score is 76.2, making it the wolrd's18th freest in the 2020 index due to lower government integrity (The Heritage Foundation, 2020).

The MGA results prominently revealed a restricted moderation effect and significant linkage between most determinants and intention to use green technologies. This implies that age groups (Young and Old) have similar perceptions. In this regard, the banks need to set identical marketing strategies for m young and old customers to enhance their chances of using such services. Expect social influence and awareness where old customers over 40 have lower awareness regarding green technology and are less likely to be influenced by their peers, unlike young customers. Similarly, both gender groups (Male and Female) have identical behaviour toward technologies, as the moderating results highlighted no major discrepancies between the gender groups. Yet, females are identified to be more innovative than males, and they perceive higher benefits from using green technologies as well as they consider the reputation of the bank as an essential factor in adopting the services, unlike the males, they give less importance to the service provider image and don't perceive to have much benefits from using green technology.

Implications

By answering the RQs, this study is essentially a fresh theoretical attempt to look into the obstacles preventing consumers from using green technology by employing a mixed-method approach, extending the UTAUT model by individual, technological, organisational, and environmental, and examining the moderating role of gender and age in the developed research model. The literature can benefit from the contributions made by this study. First, it helps identify the numerous issues affecting consumers' uptake of green technology. Second, it employs and experimentally extends the UTAUT model in forecasting the uptake of green technology. Third, the study uses both qualitative and quantitative approaches in a mixed-method approach, thus paving the way for a clearer understanding of the intricate interrelationships between the elements influencing the uptake of green technology. Lastly, the results of this study provide insightful perspectives for researchers and help managers and policymakers to create successful plans for influencing consumers' greener and sustainable usage behaviour.

Having explored and discussed how various individual, technological, organizational and environmental determinants influence customers' intention towards adopting GB technology, the study can be a viable reference in the development of effective GB policies that seek to maximize the benefits for mass customers, banks, and the economy of the country as well as to attain sustainability. The study suggests a model for policymakers, decision-makers, and bank managers by better describing their customers' issues and challenges in adopting GB technology services. Therefore, it gives a solid foundation for policy formulation, planning and coordination of development strategies towards a successful transition to green and digital consumption behaviour, which would drive the principle of sustainability.

Based on the output of the study, industrialists should pay more attention to the individual features of their customers, like awareness and motivational incentives, to foster the customers' innovativeness and improve their perception through direct marketing rather than focusing on social influence. Furthermore, bank professionals need to enhance the technological features of the GB system by offering useful, accessible, fast, convenient, functional and flexible services to maintain consistency in quality rather than focusing on security and privacy measures which are the minor concern of the UAE's customers. Moreover, the banks need to maintain an excellent reputational identity as it is a crucial intangible asset to attract customers to adopt GB technology rather than seek government backing.

Additionally, the study has statistically revealed the insignificant moderating impact of gender and age in most proposed relationships. Thus, the bank management can practically employ equivalent strategies to unveil the usefulness and ease of adopting GB technology services using the direct marketing method as an incentive since most demographic groups have a similar perception regarding this matter which is not oriented based on either their gender or age. This can practically facilitate marketers in collating and ensuring that the pitching of the GB services is made to the most relevant

target customers with minimal waste in resources, i.e. by formulating identical strategies to different demographic segments.

Limitations and Future Directions

This study mainly investigated GB technology services to provide necessary knowledge regarding specific scenarios. However, it did not include other types of GB products like green loans, green credit cards or green bonds due to the issue of heterogeneity among the GB products and services. Consequently, future studies might investigate other types of GB products that are equally essential to attain sustainability. Furthermore, introducing environmental concern as moderating variable in the model will offer a richer understanding of customers. The findings of this study can be further validated by testing the proposed model in different industrial sectors such as hospitality, healthcare or education.

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