Effect of the Quality of Banking Technology Services on Customer Satisfaction with Services and Green Banking Technology (Case Study: Iran and Iraq)

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ABSTRACT

Organizations in a competitive and challenging environment emphasize more than anything to create sustainable and profitable relationships with customers. Traditional marketing always focuses on attracting new customers and sales; while this view has changed today, maintaining current customers and creating a permanent relationship with them is on the agenda besides trying to get new customers. Here, customer satisfaction is one of the important components. Accordingly, this study has evaluated the relationship between technology service quality and services for green banking users and technology satisfaction. Thus, a questionnaire was used to collect data, and finally, information from 700 respondents was collected, which included individuals who used green banking services. The statistical sample of the research included 350 people who use green banking services in Iran and 350 people who use green banking services in Iraq in 2023. The desired model has been validated with the help of Structural Equation Modeling (SEM) analysis through AMOS and SPSS software. The results showed that the quality of technology services in Iran including (dimensions of reliability, tangible property, accountability, empathy, and confidence) had positive and significant effects on customer satisfaction with green banking services and customer satisfaction with green banking technology. As for Iraq, the first main hypothesis is confirmed: the quality of technology services including (dimensions of reliability, tangible property, responsiveness, empathy, and assurance) had positive and significant effects on customer satisfaction with green banking services. However, while the second hypothesis of the research has been confirmed: the quality of technology services has positive and significant effects on customer satisfaction with green banking technology, three sub-hypotheses have been rejected: the effect of reliability, responsiveness, and empathy dimension of technology service. Therefore, this research provides a new perspective for sensitive and committed countries to strengthen their green development in banking strategies by welcoming technological advances.

Keywords: green banking, technological service quality, customer satisfaction, green banking services, green banking technology

INTRODUCTION

The profitability of organizations depends on keeping as many of their current customers as possible with the emergence of e-commerce, the desire of various companies to create an online storefront, and the

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intensification of the competitive environment. Therefore, customer satisfaction in electronic businesses has become a subject for many marketing and management studies. One of the most important ways to gain a competitive advantage for companies is to use information technology to provide services, called electronic services. Providing services, the quality of services, and the desired features of electronic services are, on the one hand, directly associated with the level of customers' inclination and willingness to use these services, and, on the other hand, they are effective on the level of customer satisfaction (Khan and Sharma, 2020; Rahaman et al., 2022).

Meanwhile, service-oriented industries, such as banking, are intertwined with a company's services and ultimately its capacity to generate revenue (Khan, Roy, & Parvin, 2022; Raza et al., 2020). Consumers often show an informed attitude to evaluating the quality of services provided by the respective banks. In conclusion, customer retention becomes a big task for banking institutions and creates an important challenge (Ayinaddis et al., 2023). Banks cannot lose their customers, so it is in their best interest to keep in touch with them (Ho and Chow, 2023). One of the most effective strategies for building positive relationships with customers is to understand their needs and provide satisfactory services comprehensively. However, banks should continuously strive to improve their service quality in various aspects to achieve this goal (Khan, Roy, & Parvin, 2022). The importance of service quality in differentiating a bank in the market is undeniable (Ahmed et al., 2017, 2022; Inan et al., 2023). Academic researchers and stakeholders have widely respected service quality for the past twenty years. As a significant group of experts believes, service level improvement has the potential to significantly increase the productivity of businesses and banks in particular, and this role is undeniable (Gupta et al., 2021; Liu et al., 2022; Raza et al., 2022; et al., 2020; Shi and Shang, 2020; Xin et al., 2023).

The year 2020 ushered in one of the worst crises in human history: a global pandemic of the coronavirus. Acute respiratory disease (COVID-19) spread rapidly around the world, leading to a global disaster and forcing governments to take drastic control measures (Adedoyin & Soykan, 2023; Liu et al., 2020). Thus, closing schools, non-essential shops, and international border crossings helped achieve the desired goal of social isolation (avoidance of human interaction). It has had far-reaching effects on businesses (including manufacturing and service industries). This pandemic has exacerbated global supply chain issues (Khan et al., 2022; Khan and Rammal, 2022; Ranney et al., 2020). This crisis has highlighted the need for the global banking industry to put superior quality in technical green financial services, especially innovative e-banking services (Demirgüç-Kunt et al., 2021; Guang-Wen & Siddik, 2023; Naeem and Ozum, 2021).

Therefore, on the one hand, consumer satisfaction is a vital issue for the survival of various organizations, especially banks, and on the other hand, the use of technology services in the banking sector is inevitable considering the advancement of technology and the occurrence of events such as the Corona disease. So several researchers have investigated the effect of banking services and consumer satisfaction (Çolak & Öztekin, 2021; Long et al., 2022; Yan et al., 2023). They have also investigated the relationship between credit services and risks (Disemadi & Shaleh, 2020, Phan Thi Hang, 2023), e-banking satisfaction and customer loyalty (Indrasari et al., 2022), acceptance of information technology and technological services by consumers and bank performance (Dadoukis et al., 2021; Naeem and Ozum, 2021), Islamic banking (Banna et al., 2022; Mansour et al., 2021), the reaction of consumers of banking services to payments (Kubota et al., 2021), financial support of beneficiaries (Song et al., 202; Yudaruddin, 2023), and electronic banking (Rahi et al., 2022).

However, reviewing the previous relevant literature makes clear that the present research is probably the first attempt to investigate the effect of technology service quality on banking services for customers and satisfaction with banking technology in its various dimensions such as reliability, tangibility, responsiveness, assurance, empathy, satisfaction with bank services, and satisfaction with banking technology. Therefore, this research investigated the effect of technology quality on banking services for customers and satisfaction with banking technology.

This research has several sections. The next section is dedicated to presenting the subject literature and the theoretical foundations of the research. The third section explains its method. The fourth section is devoted to data analysis and presentation of results. The final section provides a summary and suggestions.

Theoretical foundations and research background

Quality of banking services and its components

Service quality in the banking business is essential to increase consumer satisfaction. Excellent linkages between banks and consumers foster customer loyalty, which provides banks with a competitive advantage. Hence, previous research has found a long-term relationship between banks' service quality and customer satisfaction (Bala et al., 2021). The concept of service quality seems to be essential, which includes both service outputs and service performance processes (Ahmed et al., 2022). The service quality model has received much attention due to the pioneering research of Parasuraman et al. (1985). The findings of this study showed ten service quality evaluation parameters and presented a service quality difference model. They reduced ten service quality evaluation parameters to 5 in 1988. They prepared a 22-question questionnaire and proposed a paradigm that includes diagnostic features and some functional consequences. The parameters of the proposed model are (1) reliability, (2) tangibility, (3) responsiveness, (4) empathy, and (5) assurance (Khan et al., 2024).

- Reliability

The term "reliability" refers to the degree of consistency and reliability with which a given service operates (Koay et al., 2022). The capacity of personnel and service delivery technologies for specified services is precisely termed as service and technology reliability. Online service platforms and technologies communicate directly with consumers during green service activities (Demir et al., 2020). Consequently, the effectiveness of green service channels may affect customers' evaluation of the level of service. As a study showed, excellent service reliability among consumers increases consumer service satisfaction (Saad, 2021).

- Tangibility

The tangibility component is a physical tool the businesses use to produce and perform tasks. Customers can form an image that they remember effortlessly due to the supporting technology used to deliver the service (Balinado et al., 2021). Banking services and technology tangibility affect consumer satisfaction (Nambiar et al., 2018).

- Responsiveness

A fundamental aspect of service quality that affects customer satisfaction is responsiveness (Koy et al., 2022). Consumers may experience a greater feeling of security due to the company's adherence to their preferences in service delivery. This assures consumers that the service process is conducted professionally and ethically and increases customer satisfaction, especially in financial institutions (Johnson and Karley, 2018).

- Empathy

Empathy includes the willingness of a business and its officials to understand the demands and challenges of consumers, to communicate effectively, and to receive individual attention, which results in a higher degree of consumer satisfaction with improved services. Empathy strongly affects consumer satisfaction because without it consumers will perceive positively the quality of service they receive (Balinado et al., 2021). Empathy in banking services and technology positively affects consumer satisfaction (Nambiar et al., 2018).

- Assurance

"Assurance" in the service sector refers to the expertise, politeness, and capacity of employees to create trust (Koay et al., 2022). Consumers evaluate the level of quality depending on the speed and accuracy of the service. Consumers expect service providers to deliver their orders accurately and on schedule. It is also very important to ensure that the stated costs and prices are fair and reasonable. Consumers often feel self-confident when they receive the specific services they want (Balinado et al., 2021). Assurance about the use of technology in green services significantly affects consumer satisfaction (Kesharwani, 2020).

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Banking in the periods of crisis (Corona pandemic)

The global pandemic significantly changed the organizational framework of businesses (Khan et al., 2022). This epidemic caused a significant change in organizational and social fields (Khan and Arif, 2023). Particularly, there has been a shift from traditional physical business operations and interactions towards contactless alternatives, especially in green banking (Rahi et al., 2022). The World Health Organization has issued recommendations that advocated social distancing and non-contact interaction as effective measures to limit the spread of the coronavirus (Khan and Rammal, 2022). Meanwhile, a contactless environment has expanded banking services in the banking technology industry (Alarifi and Husain, 2023). Green financing systems allow consumers to comply with social distancing protocols during the coronavirus pandemic by providing vital capabilities that do not require physical touch (Abbas et al., 2023). Therefore, the current research examines the service quality of green development technology in banking that increased green service and technological satisfaction of consumers during the coronavirus pandemic. Green banking platforms are an alternative way of banking in the financial industry compared to conventional banking services.

However, the complex nature of green banking has been driven by sophisticated network systems and the continuous evolution of banking technology and software (Rahi et al., 2022). The green banking sector has experienced the need for significant development in consumer satisfaction with banking services and technology despite rapid advances in technology (Alchuban et al., 2022). Previous research has shown the need for more attention to the quality of banking technology services (De Leon et al., 2020; Ganguli and Roy, 2011; Tam, 2023). Therefore, we should examine the impact of technology service quality on consumer satisfaction with green development and innovation from the perspective of the banking business.

Technology service quality and satisfaction with green banking services

Currently, the most important issue in marketing research is consumer satisfaction (Hammoud et al., 2018). Consumer satisfaction usually establishes a link between pre-transaction processes and post-purchase behaviors, which include changes in attitudes, repeat purchases, and loyalty to a brand (Back and Parks, 2003). The above inference seems relative because it requires a comparison of mentality and a reference point or primary criterion of comparison. Green service satisfaction refers to the assessment of customers about their interaction with technology and their level of satisfaction with conventional customer service methods (Bhatnagar and Rajesh, 2023).

Similarly, Anderson and Srinivasan (2003) defined green service satisfaction as a consumer's enjoyment of their previous shopping experience with a particular e-commerce. Service quality, such as product variety, tangible cases, responsiveness, interaction, and consistency significantly affects consumer satisfaction with a green business. Providing services through technology and quality is very important in increasing consumer satisfaction (Amin, 2016).

Accordingly, we can propose the following assumptions:

First main hypothesis: Technology service quality significantly affects customer satisfaction with green banking services.

- The reliability dimension affects significantly the satisfaction with the services of green banking consumers.
- The tangible property dimension affects significantly the satisfaction with the services of green banking consumers.
- The responsiveness dimension affects significantly the satisfaction with the services of green banking consumers.
- The empathy dimension affects significantly the satisfaction with the services of green banking consumers.
- The assurance dimension affects significantly the satisfaction with the services of green banking consumers.

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Technology service quality and satisfaction with green banking technology

The availability of innovative green technology and services enables green consumers to gain the necessary materials without the need for direct assistance from service personnel (Bhatnagar and Rajesh, 2023; Khan and Parveen, 2022). Technical service organizations provide many benefits including technological innovation, improved customer experience, and reduced personnel costs in support of green development and innovation (Abbas et al., 2023; Maheshwari and Chatnani, 2023). ATMs, internet banking, mobile banking, and online shopping are the most popular banking technologies (Iqbal et al., 2017). The functioning of banks relies heavily on information technology and telecommunications in today's dynamic market. Internet connectivity has grown significantly because of optical fiber and CPUs, making banking processes smoother and faster (Khan et al., 2024).

Similarly, smartphones and the next generations of communication have revolutionized online transactions. Consequently, technology significantly affects the banking industry, especially in providing excellent services to consumers (Khan and Arif, 2023), which subsequently requires the banking sector to implement technology procedures and integrate day-to-day business rules locally and globally (Ahmed et al., 2017). Therefore, we can propose the hypothesis of technology service quality with technology satisfaction as follows:

The second main hypothesis: the quality of banking technology services significantly affects customers' satisfaction with green banking technology.

- Reliability of the dimension of banking technology services significantly affects consumers' technology satisfaction.
- Tangible aspects of the dimension of banking technology services significantly affect consumers' technology satisfaction.
- Responsiveness of the dimension of banking technology services significantly affects consumers' technology satisfaction.
- Empathy of the dimension of banking technology services significantly affects consumers' technology satisfaction.
- Assurance of the dimension of banking technology services significantly affects consumers' technology satisfaction.

Research Background

We can refer to the following internal and external research that has the most affinity with the present research.

Mehrara and Bozorgi (2023) presented in a study the development model of green management in branches of the Tejarat Bank of Iran. It tries to provide a green management development model in the branches of the Tejarat Bank of Iran. Its findings have shown that the final model of this research has 4 dimensions and 11 components. The dimension of organizational innovation includes the components of equipment, training, and support, organizational commitment includes the components of emotional commitment, normative commitment, and continuous commitment, the dimension of organizational leadership comprises performance, decision-making, and management, and the dimension of organizational strategy includes the components of leadership strategy and culture building. It suggested at the end that Tejarat Bank branches should use the correct leadership, manage employees and customers, use innovative ideas, and adjust the appropriate strategy. Tejarat Bank can take effective steps towards the implementation of green management in its branches throughout the country by raising the commitment of employees. Asgarnjad Nouri et al. (1402) show that green banking has a positive effect on brand resonance in banks and consumer satisfaction with the performance of social responsibility in banks. Their research confirmed the positive effect of brand resonance on consumer satisfaction with the performance of social responsibility in banks. It confirmed also the mediating role of brand resonance in the relationship between green banking and consumer satisfaction with the performance of social responsibility in banks. Zhamtakesh (2023) showed that the quality of electronic services has a meaningful relationship with customer loyalty, and a positive and significant correlation with loyalty by 0.653 indicates that it has a great effect on loyalty. Likewise, service quality has a positive correlation with privacy with a value of 0.554. Therefore, the quality of services has a significant relationship

with privacy. The quality of services has a positive correlation with performing services to the value of 0.888. The quality of services has a positive correlation with the availability of the system to the value of 0.819. Bayani (2023) investigated the relationship between green banking practices and the environmental performance of banks through the mediating role of green financing. It showed, through the structural equation model, that there is a significant relationship between green banking measures, including measures for bank employees, bank operations, bank customers, and bank policy with green financing and banks' environmental performance. Likewise, a significant relationship is true between green financing and banks' environmental performance. Finally, green financing plays a mediating role in the relationship between green banking practices and banks' environmental performance. Khajeh Saeed and Sattari (2023) showed that the dimensions of electronic service quality, including reliability, privacy and security, website design, service, and support, have a positive effect on customer loyalty. Mortezaei and Azadeh Del (2023) investigated the relationship between internal green marketing dimensions and service quality in the banking industry. As its findings showed, the two components of internal green marketing, including employee recruitment and internal communication, have no relationship with service quality in Saderat Bank branches in Gilan province because of the lack of attention to professional criteria in recruiting and hiring employees, and the inability of managers to promote person-to-person communication between individuals and groups. However, other factors including training, motivation, job security, and employee retention are associated with service quality. Managers who are concerned with monitoring and improving external customer satisfaction should develop the competence of employees to act as part-time marketers for the organization. Therefore, managers' awareness of the motivations of employees' behavior and creating favorable conditions to respond to these motivations can motivate employees in line with the goals of the organization. This also provides managers with a subtle insight into the competitive advantage based on the environment. Arabshahi and Makharaghi (2022) also showed the effect of the quality of the Internet bank on customer satisfaction, perceived value, and trust. As they reported, the impact of Internet bank quality, satisfaction, perceived value, and customer trust on customer loyalty has been significant.

Khan et al. (2024) investigated the perceived technology service quality of private commercial banks in Bangladesh in which they especially emphasize e-consumer satisfaction with the banking technologies and services of the relevant banks. Three hundred and fifty-five data were implemented through the structural equation modeling to test the hypothesis. As the results showed, the three dimensions of technology service quality have a positive and significant relationship with consumers' satisfaction with banking services. The remaining two dimensions (responsiveness and empathy) showed a negative but significant relationship. As for technology service quality and technology satisfaction, all factors except "reliability", "responsiveness", and "empathy" showed a significant positive relationship with technology service quality during the pandemic situation. Indrasri et al. (2022), who use primary data through a questionnaire that was distributed online among 110 electronic banking users such as respondents, show that the quality of electronic banking services, reliability, and design of the application and website affect both e-banking user satisfaction and e-banking user loyalty. Meanwhile, privacy and security only affect the loyalty of e-banking users, not the satisfaction of e-banking users. Amin (2016) examined the quality of Internet banking services and their impact on electronic customer satisfaction and customer loyalty. He distributed 1000 questionnaires to internet banking customers and received 520 questionnaires. As the results confirmed, all four dimensions (personal need, site organization, user-friendliness, and website efficiency) are distinct constructs. Likewise, the quality of Internet banking services consisting of four dimensions has good reliability and each dimension has a positive and significant relationship with the quality of Internet banking services. The efficiency of the banking website is an important aspect of the quality of Internet banking services.

RESEARCH METHOD

This empirical research has used the data of customers of the banking sector in Iran and Iraq in 2023. This research identified, following Khan et al. (2024), 22 factors in the dimensions of technology service quality, 5 factors in the area of satisfaction with banking services of green banking customers, and 3 factors on consumers' satisfaction with banking technology (Parasuraman et al., 1985; Amin, 2016). We used the following questionnaire:

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Table 1: Questions of the questionnaire

Variables	Code	Questions	Source
Reliability	RD-1	Working at a certain time	Parasuraman et al., (1985); Parasuraman et al., (1994); Nambiar et al., (2018); Keshrawani, (2020)
	RD-2	Honesty in solving consumer problems	
	RD-3	Doing properly the service at first	
	RD-4	The promise of green services	
	RD-5	Providing error-free online services	
Tangibility	TD-1	Green equipment with a modern appearance	Khan et al. (2024)
	TD-2	Facilities for green physical service	
	TD-3	Acquaintance of employees with technology	
	TD-4	Providing relevant items in green service	
Responsiveness	RSD-1	Knowing service time	Khan et al. (2024)
	RSD-2	Fast customer service	
	RSD-3	Willingness to provide continuous assistance to customers	
	RSD-4	Easy-going in responding to customers	
Assurance	AD-1	Instilling confidence in customers	Khan et al. (2024)
	AD-2	Customers' sense of security in online transactions	
	AD-3	Constant kindness to customers	
	AD-4	Competence in answering customer questions	
Empathy	ED-1	Attracting individual attention of customers	Khan et al. (2024)
	ED-2	Convenient operating features for all customers	
	ED-3	Personal attention to customers	
	ED-4	Continuous attention to customer interests	
	ED-5	Understanding customer needs	
Satisfaction with bank services	BSS-1	Satisfaction with green banking services	Zavareh et al. (2012); Mathew et al. (2020)
	BSS-2	Satisfaction with service time	

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	BSS-3	Satisfaction with keeping records of customers' activities	
	BSS-4	Satisfaction with fast service at the request of customers	
	BSS-5	Satisfaction with online transactions	
Satisfaction with banking technology	BTS-1	Satisfaction with green equipment with a modern appearance	Libana-Kabilinas et al. (2013); Ramesh et al. (2020)
	BTS-2	Satisfaction with green facilities	
	BTS-3	Satisfaction with relevant technologies in green services	

The research statistical population is all the customers of banking services in Iran and Iraq. 350 samples for Iran and 350 samples for Iraq have been taken from this statistical population by sampling at convenience. It used the experts' point of view to measure formal validity, convergent and divergent validity, and factor analysis to investigate construct validity. Cronbach's alpha and composite reliability determine reliability. Research hypotheses are also tested by structural equation modeling (SEM).

Data analysis

Fitting, validity, and reliability indices

Table (2) presents the results of validity and reliability analysis, which includes item codes, factor loading, composite reliability, and Cronbach's alpha. The exploratory factor analysis (EFA) method first establishes construct validity to evaluate the proposed research model. The method of confirmatory factor analysis (CFA) confirms then the model.

Table 2: EFA and CFA test results

Variables	Code	Iran				Iraq			
		EFA				CFA			
		Factor load	Probability	Factor load	Probability	Factor load	Probability	Factor load	Probability
Reliability	RD-1	0.67	685	0.89	695	0.55	589	0.73	895
	RD-2	0.63		0.9		0.67		0.73	
	RD-3	0.46		0.88		0.62		0.72	
	RD-4	0.6		0.4		0.53		0.72	
	RD-5	0.62		0.85		0.51		0.72	
Tangibility	TD-1	0.6	752	0.69	695	0.52	589	0.49	712
	TD-2	0.6		0.69		0.74		0.47	
	TD-3	0.63		0.93		0.75		0.85	

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	TD-4	0.59		0.83		0.72		0.88	
Responsiveness	RSD-1	0.62	856	0.65	758	0.72	859	0.8	695
	RSD-2	0.58		0.8		0.7		0.74	
	RSD-3	0.62		0.77		0.75		0.71	
	RSD-4	0.64		0.77		0.66		0.58	
Assurance	AD-1	0.7	658	0.75	712	0.44	781	0.84	801
	AD-2	0.55		0.76		0.64		0.8	
	AD-3	0.42		0.73		0.56		0.66	
	AD-4	0.8		0.72		0.9		0.85	
Empathy	ED-1	0.74	852	0.66	725	0.77	715	0.73	692
	ED-2	0.77		0.66		0.92		0.65	
	ED-3	0.75		0.58		0.92		0.86	
	ED-4	0.76		0.85		0.45		0.86	
	ED-5	0.73		0.69		0.74		0.86	
Satisfaction with bank services	BSS-1	0.48	715	0.75	659	0.72	569	0.86	621
	BSS-2	0.73		0.4		0.41		0.95	
	BSS-3	0.74		0.7		0.85		0.94	
	BSS-4	0.55		0.7		0.87		0.33	
	BSS-5	0.42		0.71		0.25		0.82	
Satisfaction with banking technology	BTS-1	0.89	758	0.65	569	0.69	658	0.92	712
	BTS-2	0.89		0.27		0.55		0.92	
	BTS-3	0.88		0.75		0.74		0.73	

Source: research findings

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As we can see, all the factors in EFA and CFA were retained because they showed strong factor loadings of more than 0.60 (Chatterjee and Kar, 2020).

Cronbach's alpha calculation method used in a pre-test for more assurance helps estimate the internal consistency between questions and components. Thus, the questionnaire was given randomly to 30 people from the research sample and Cronbach's alpha was calculated through the data of this questionnaire.

Table 3: Cronbach's alpha coefficient and reliability of the questionnaire

Structure under study	Cronbach's alpha coefficient	Cronbach's alpha coefficient
Reliability	Iran	Iraq
Tangibility	0.821	0.836
Responsiveness	0.859	0.825
Assurance	0.809	0.810
Empathy	0.795	0.788
Satisfaction with bank services	0.755	0.722
Satisfaction with banking technology	0.801	0.695
Total	0.831	0.795

Source: research findings

The results for the returned questionnaires for the countries of Iran and Iraq were 0.831 and 0.795, respectively. Therefore, the research questionnaire is highly reliable.

Results of data analysis

This research has identified seven components and thirty stratified questions (items). Therefore, we have explained two main hypotheses and ten sub-hypotheses. The desired model has been validated by Structural Equation Modeling (SEM) analysis through AMOS and SPSS software. Table (4) presents the results of data analysis for the countries of Iran and Iraq.

Table 4: Results of hypothesis testing through structural equation modeling (SEM)

Hypothesis	Relationship	Iran			Iraq		
		Coefficient	Probability	Conclusion	Coefficient	Probability	Conclusion
First main hypothesis	Quality of banking technology services to the satisfaction of customers with green banking services	0.425	0.000	Confirmed	0.425	0.000	Confirmed
Sub-hypothesis 1	Reliability to customer satisfaction with green banking	0.210	0.024	Confirmed	0.325	0.003	Confirmed

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	services						
Sub-hypothesis 2	Tangibility to customer satisfaction with green banking services	0.308	0.001	Confirmed	0.295	0.025	Confirmed
Sub-hypothesis 3	Responsiveness to customer satisfaction with green banking services	0.210	0.028	Confirmed	0.225	0.035	Confirmed
Sub-hypothesis 4	Assurance to customer satisfaction with green banking services	0.249	0.018	Confirmed	0.325	0.002	Confirmed
Sub-hypothesis 5	Empathy to customer satisfaction with green banking services	0.758	0.000	Confirmed	0.452	0.000	Confirmed
Second main hypothesis	Quality of banking technology services to customer satisfaction with green banking technology	0.489	0.000	Confirmed	0.369	0.002	Confirmed
Sub-hypothesis 1	Reliability to customer satisfaction with green banking technology	0.235	0.015	Confirmed	0.109	0.089	Rejected
Sub-hypothesis 2	Tangibility to customer satisfaction with green banking technology	0/312	0/001	Confirmed	0/296	0/020	Confirmed
Sub-hypothesis 3	Responsiveness to customer satisfaction with green	0.540	0/000	Confirmed	0.102	0.090	Rejected

	banking technology						
Sub-hypothesis 4	Assurance to customer satisfaction with green banking technology	0.245	0.012	Confirmed	0.095	0.150	Rejected
Sub-hypothesis 5	Empathy to customer satisfaction with green banking technology	0.310	0.001	Confirmed	0.285	0.032	Confirmed

Source: research findings

The validation shows that both main hypotheses and ten sub-hypotheses have been confirmed for the country of Iran, namely, the quality of technology services including (dimensions of reliability, tangible property, responsiveness, empathy, and assurance) has had positive and meaningful effects on customer satisfaction with green banking services. Likewise, the quality of technology services including (dimensions of reliability, tangible property, responsiveness, empathy, and assurance) had positive and significant effects on customer satisfaction with green banking technology.

As for Iraq, the first main hypothesis is confirmed: the quality of technology services including (dimensions of reliability, tangible property, responsiveness, empathy, and assurance) had positive and significant effects on customer satisfaction with green banking services. However, although the second hypothesis of the research has been confirmed, namely the quality of technology services has had positive and significant effects on customer satisfaction with green banking technology, three sub-hypotheses have not been confirmed, namely the effect of the dimensions of reliability, responsiveness, and empathy of technology service.

CONCLUSION AND RECOMMENDATIONS

Currently, the more challenging thing for banks is to operate with the best quality of service based on traditional banking service platforms. Not doing so would jeopardize the quality of banking services, especially for countries like Iran and Iraq, which are still struggling for the severe foundations for emerging and innovative green banking services. So the current research investigated the effect of the quality of banking technology services on customer satisfaction with green banking services and technology for the countries of Iran and Iraq. Its two main hypotheses and ten sub-hypotheses were founded on the quality of technology services (through the service quality model) and respected the service and technology satisfaction of green banking customers. Accordingly, a questionnaire method was an appropriate help to collect data from 700 respondents, which included individuals who used green banking services. The statistical sample of the research included 350 people using green banking services in Iran and 350 people using green banking services in Iraq in 2023.

The results showed that the technology service quality model had a significant positive effect on the satisfaction of consumers with green banking services in Iran and Iraq. This means that the banking sector in Iran and Iraq has required green development and innovation in banking. It is argued that the improvement of the quality of technology services, the tendency of various companies to create an online storefront, the intensification of the competitive environment, and the profitability of organizations depend on maintaining the satisfaction of their current customers. Therefore, customer satisfaction in e-businesses has been the subject of many marketing and management studies. A competitive advantage for today's banks is mostly gained by the use of information technology to provide banking services, which is referred to as the quality of technology services. Providing services, quality of services, and the features of the electronic services of banks are directly

associated with the level of customers' inclination to use these services, and are effective on the level of satisfaction and electronic banking customer loyalty. Customers and banks enjoy many benefits of electronic banking facilities and improved quality of technology services. For example, customers receive customized banking services while banks can cost-effectively provide those services. Banks have to face several problems because many banks adapt and adopt e-banking services simultaneously. Banks are facing tough competition in attracting and retaining customers with their electronic banking platforms because of the increase in the adoption rate of electronic banking systems. So banks, having competitive advantages, should provide high-quality electronic banking services. Therefore, the bank can increase its level of satisfaction with electronic banking by increasing the quality of services. This conclusion is consistent with the findings of Asgarnejad Nouri et al. (2023), Khan et al. (2024), and Amin (2016).

This study showed that the dimensions of reliability, tangible property, responsiveness, empathy, and assurance of the technology service quality model had a significant impact on customer satisfaction with green banking services in Iran and Iraq. So we argue the change in competitive and social conditions for companies in general and banks, in particular, showed that the customer rules the markets: today's market belongs to the customer. Consequently, managers should re-evaluate their competitive behaviors and methods. Responsive organizations facilitate the organization's efforts to satisfy the customer. Here the components of service quality, time, innovation in services, reliability, and flexibility are very vital. Various research has investigated factors affecting customer satisfaction in the country's banking industry, most of which have been on the effect of different dimensions of service quality, satisfaction, and customer expectations on their satisfaction. Customer satisfaction with the quality of service and technology of the country's banks will have positive effects on the level of satisfaction of banking customers. Likewise, knowing about customer satisfaction, improving the quality, improving the values and speed of service delivery, adapting the bank's policies to the customers' needs, checking the accuracy of the provided services, etc. can greatly help banks retain customers. This will not be possible unless the bank accepts that attention to customers is the key to their loyalty. The low level of providing green banking technology can be an important reason for the lack of reliability in the provision of green banking technology in Iraq. Possibly the failure to receive feedback on green banking technology and its implementation in Iraq, the lack of attention to the level of assurance, and the lack of responsiveness to customers may have been the most important reasons for the non-significance of accountability, customer satisfaction, and customer satisfaction assurance in Iraq. Thus, bankers should see themselves in the mirror of their customers, try to understand their customers, and make sure that their customers are fully satisfied in a situation where the competition for banks becomes more complicated over time. Therefore, electronic banking services in the service quality and technology quality and its various dimensions are supposedly an effective factor in customer satisfaction. These results are also consistent with the findings of Arabshahi and Mokhareghi (2022), Indrasri et al. (2022), and Amin (2016).

Banks, according to both service perspectives, can effectively solve such issues to promote innovative and developed green banking technology. Green banking services, technology service quality, and the identified satisfaction model can fall under green banking and marketing, especially green banking, green technology, marketing and development of green services, and consumer behavior. This classification is theoretical.

Finally, since the quality of banking technology services can have a positive effect on customer satisfaction with green banking services and technology, the technology service quality model should examine dialectically the development of green banking, the development of technology and innovation, and the psychology of the consumer in banking services. Likewise, future research should measure technology-based green development in banking services based on variables of electronic brand loyalty, electronic security, and reliability. Moreover, the selected relationships should be evaluated by examining the moderating relationship between brand loyalty and trust. Finally, this research in public banks should be compared to private banks.

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