GOMAL UNIVERSITY
JOURNAL OF RESEARCH

Gomal University, Dera Ismail Khan, Khyber Pakhtunkhwa, Pakistan
ISSN:1019- 8180 (Print) ISSN: 2708- 1737 (Online)

Website	www.gujr.com.pk	HEC Recognized	Social Sciences	CrossRef	DOI:10.51380

FINTECH'S ROLE IN SUSTAINABLE BANKING PERFORMANCE: ARE GREEN BANKING POLICIES DRIVING SUSTAINABILITY IN PAKISTAN'S BANKING SYSTEM?

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KEYWORDS

Fintech, Green Banking, Sustainable Banking Performance, SDG 12, SDG 15

Article History

Date of Submission: 20-06-2023
Date of Acceptance: 20-09-2023
Date of Publication: 30-09-2023

ABSTRACT

The technology pervades every aspect of business operations, making it impossible for any organization to evade its presence. The delight of the customer is now the priority of the organization. Adopting the sustainable practice of using fintech to facilitate the customer with ease is the game now for every bank in Pakistan and it needs serious attention. This study explored this gap and added facilitation aspect of green banking practices to the loop. Without the sustainable developmental goals-SDG, no business sees its future growing. Adoption of fintech is one of them. State Bank of Pakistan also promulgated green banking regulation in 2017, which forces the banks to adopt green banking practices in finance, operational, and daily routines of the personnel. Our explanatory, quantitative study assessed the effect of fintech on sustainable green practices and the bank's green practice activities as a mediator through a questionnaire consisting of 31 questions filled by 302 banking professionals in Karachi, Pakistan, & found that the green banking activities mediated the relationship between the fintech adoption and sustainable banking practices but the direct effect of fintech is found to be insignificant as local environment and the mindset of the employee is not ready for it. The study provide vauable information and recommendations.

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DOI: https://doi.org/10.51380/gujr-39-03-04

INTRODUCTION

In recent years, the businesses globally have faced growing pressure to embrace the sustainable practices from consumers, organizations, governments as well as shareholders (Hou, Khokhar, Sharma, Sarkar & Hossain, 2023). The United Nations' SDGs address global issues that need attention from the international community, including the banking industry, to achieve social equity, economic viability, and environmental protection (Jan, Lai, Asif, Akhtar & Ullah, 2023).

A bank is a financial institution that lends money and safeguards the deposits of bank account holders and is also known as a custodian of the customers (Sethi & Bhatia, 2023). The banking & financial services sectors lack proper alignment between SDGs and sustainable performance (Buallay, Marri, Nasrallah, Hamdan & Zureigat, 2023). Therefore, with growing modern and technological age this limited role of banks can expend too many folds and envelop a broad area of technological adoption for its financial and strategic performance toward sustainability. Fintech and green banking are emergent concepts in banking industry to achieve sustainable performance and bring eco-friendly systems (Wen & Siddik, 2023). In Pakistan, the banking sector has embraced Fin-Tech to modernize financial services while emphasizing sustainability (Waqas, 2013). This has improved efficiency and customer suitability by abridging traditional processes.

Fin-Tech adoption has also brought innovation in financial products and services, attracting a diverse customer portfolio and enhancing sector competitiveness. Internationally, the Fin-Tech integration positions Pakistani banks to compete effectively and attract foreign investments. Crucially, this transformation builds trust and loyalty by aligning with the customers' values, emphasizing sustainability (Butt, Naeem, Ali & Hameed, 2022). In essence, Pakistan's banking sector's proactive Fin-Tech adoption drives efficiency, innovation and sustainability, benefiting customers and global competitiveness. Thus, FinTech comprises internet banking, net banking, peer-to-peer lending, digital financing, mobile banking, ATMs, as well as many other banking facilities relevant to technology (Sajid, Ayub, Malik & Ellahi, 2023; Kazmi, 2003). The banking institutions generally offer the range of savings accounts, debit and credit card services, loans, and investment plans (James & Ghosh, 2023). Fintech in banking refers to the technologically enhanced financial solutions that encompass all the commodities that banks would typically supply. There are some examples of financial services that the Banking industry can adopt like the digital cash, digital currency, cryptocurrency, digital mortgage, digital remittance, the digital investment, digital leasing, cash management, digital insurance, digital advising and payments, the digital invoicing digital factoring, crowdfunding, along with the digital lending (Dwivedi, 2021).

Another definition of fintech is a new type of financial services industry that combines IT with monetary services including payments, remittances, and asset management. The sector of the financial industry made up of businesses that use technology to develop the efficient monetary systems (Khairullaevna & Mirabidovna, 2023). For the firm's intensity, financial technology serves as stimulant for increased output and financial advancement (Jikrillah & Fadah, 2023). In recent years, the banking business has expanded in scope in response to the environment's shifting dynamics. It has now evolved into the era of the online banking, where banks are now investigating new distribution channels for the services they provide to their clients (Yıldırım & Erdil, 2023; Yakhlef, 2001). New methods and technologies will bring in more focused, stable, and serious customers with the right investments, thus leading to higher financial performance (Riemer, 2017). Financial performance indicators like ESG reporting (Макаров, 2023) are used to determine how well businesses utilize investments to create value for stakeholders. A company's financial performance can be used to compare similar companies within the single industry or to make comparisons between industries or divisions, to determine the company's financial status during certain period (Azizah, 2023). Financial technology lowers the expenses of trading for banks, increasing availability and affordability of commodities (Kabra & Jadhav, 2023).

Fintech is the delivery of financial products and services to stakeholders by fusing innovation and technology. Fintech has played a significant role in the financial sector for the past 30 years or so, as is well known. It makes a significant difference in way that service delivery, customer happiness, efficiency & effectiveness are realized (Leong & Sung, 2018). Strategic management of technology must be considered when considering the use and adoption of fintech in banking sector because it necessitates alignment with operational goals and procedures. Acceptance by end users and residents is one of the difficulties. Even though about 32% of people use mobile banking, Consumers still retain an unfavorable perception of mobile banking and net banking (Singh, 2023). This unfavorable perception of customer can be modified with use of efficient fintech strategies (Shin & Cheng, 2023). These fintech plans are coupled with green practices in the banking sector (Udeagha & Muchapondwa, 2023). As technology-based solutions in the banking sector would be inclined toward environmentally friendly solutions (Gaudio et al., 2023), due to fintech, customers will not have to come to branch Prastyanti et al. (2023). This can only be done rapidly, if the banks have adopted green practices in their daily operations, hence carbon footprint of the banks will be reduced to many folds (Udeagha & Muchapondwa, 2023).

Background

The economic development of developing countries depends upon the financial institution of the country (Ullah, Luo, Ali & Irfan, 2023). They hold the savings of the individual and surplus units of economy, finance expansion of various projects, trade, and businesses, and facilitate various projects for the economic development of the country (Sethi & Bhatia, 2023). Without the strong banking system, we cannot develop effectively in the era of globalization, because it regulates the flow of money, and the efficiency of the banking sector affects economic growth directly (Sharifova & Bakhtinur, 2023). If the efficiency of banks is positive, then it will create a positive impact on the economy. Their inefficiency affected economic growth by creating a financial crisis (Ahmed, 2015). Banks are considered financial intermediaries that work as the sellers of products to make the money. The banks acquire interest by selling their obligations. Financial institutions execute the monetary and financial policies to develop the economy by removing all the barriers effectively mainly through relying upon the efficient allocation of the resources and manpower (Shahzad, 2021). Pakistan is the country that is suffering from the financial crisis and by adopting the fintech it can reduce its cost and improve its performance (Jatoi, Kazi & Zafar, 2023). For the adoption of fintech, the regulatory authority of Pakistan took the initiative of Digital accounts and branchless banking and a new module of payment Raast.

Pakistan has a financial inclusion ratio of 21%, compared to average of 33% for lower-middle -income countries. There are more than 160 million biometrically verified mobile connections in Pakistan there are only 58 million mobile wallet accounts in country, but 53 percent of these are inactive. Mobile banking users are around 8.9 million, 42.8 million ATM payment cards, and 3,003 E-commerce merchants as of 30 June 2021 (SBP, 2021). Banking sector of Pakistan has gone through three phases of growth which are pre-nationalization, nationalization, and post-nationalization (Tripathi, 2023). In the pre-nationalization phase at the time of partition of Pakistan and India, we had only two banks at that time which are Habib Bank and Australian Bank Ltd. Government of Pakistan launched State Bank of Pakistan Act in 1956 and introduced Banking Companies Ordinance in 1962 for the development of the banking sector of Pakistan. The government of Pakistan founded the State Bank of Pakistan in 1948 and the National Bank

of Pakistan in 1949. Second phase began in 1974 when government of Pakistan decided to nationalize the banking sector by merging all banks and establishing five banks. The last phase which is titled post nationalization began in 1990 when the government of Pakistan privatized all banks and denationalized two financial institutions by making amendment to National Act of 1974.

The government made relaxation in policies of the banking sector which encouraged private sector to grow (Zafar, 2013; Hussain et al., 2023). Fintech is likely to be most productive and successful for the financial services provider that involves calculations, processing payments, remittance, and record-keeping, in which there is a lot of transparency, and performance can be easily tested and verified (Thakor, 2019). Those banking activities that emphasize economic, social, and ecological factors to protect the climate and natural resources are known as green banking (Chen, 2020). The concept of green banking evolved from Western world and aimed to encourage banks to reduce their carbon footprint, and waste and to introduce environmentally friendly practices (Hadi et al., 2023) such as branchless banking, digital banking, and paperless banking. The green banking is now the very famous practice to minimize environmental and sustainability risks. It has been observed that the State Bank of Pakistan is also taking a keen interest in developing the policies for implementation of green banking practices to bring the sustainable performance of the banks to improve the economic system of the country. Thus, vision of the State Bank of Pakistan behind green banking practices is to initiate eco-friendly future sustainability of the environment that can lead to the sustainable performance of the banks.

The current state of the environment has a significant negative impact on not only people but also on how businesses operate on day-to-day basis. As result, everyone and every firm adopts the "Go Green" behavior as a global guiding principle (Ebaid, 2023). Banks play a significant role in protecting the environment to improve our quality of the life as part of the "Go Green" movement, which advocates eco-friendly living. According to Norton, and Parker (2015), bank employees are instructed to play a crucial behavioral role to maintain better banking practices that are more environmentally friendly and to have bank sustainability performance. This is because there is a growing trend to update the traditional banking systems with green banking strategies in the modern banking system (Nguyen, 2023). These efficient the green banking coupled with the fintech adoption have become an efficient tool for the enhancement of the banking system towards sustainability (Wen & Siddik, 2023). Researchers have recommended that financial institutions explore and introduce more fintech tools. Adoption of these fin tech tools if coupled with the green banking practice can make the whole system more efficient and sustainable (Qin et al., 2023). This study aims to explore this gap in how Pakistani banks adopt fintech for customers' delight and how this can lead to a more sustainable performance of the banks.

Problem Statement

There have been many challenges faced by the banking sector of Pakistan from independence till now. The major factor behind these challenges is the low literacy rate (Habib et al., 2023) and focus on short-term goals (Papanek, 2023). The banking industry of Pakistan is gradually moving towards the adaptation of the fintech and green banking practices to gain sustainable performance (Masood et al., 2023). Thus, there is less research on the role of fintech with the mediating effect of green banking practices in Pakistan. Secondly, in the current scenario, as we are facing high inflation it is important to conserve the resources, do eco-friendly practices, and

adopt financial technology to gain sustainable performance of banks. The best way to adopt the strategy to reduce the cost, and improve the performance and efficiency is by implementing the strategies by bringing fintech and green banking to Pakistan. Thus this study focuses on driving out the aspect and understanding how the fintech is attached to sustainable performance and the green banking regulations act as major players in achieving this transition (Shaikh & Amin, 2023; Fakhira et al., 2023). The study aims to develop a practical framework to assess banks' sustainable performance regarding SDGs by analyzing their tech adoption and green banking activities.

LITERATURE REVIEW

Fintech

According to Dwivedi (2021), fintech is combination of three words that are finance, financial services, and technology. The use of internet-based digital technology while providing financial services to the customer is known as fintech to achieve efficiency (Taherdoost, 2023). Fintech will result in creation of a new business model and in creating new services. (Dwivedi, 2021). It is recent technology that eases business model that is related to financial services providers. The following are some dimensions of fintech like creating, changing, improving, disruption, and collaboration. Some of most recent examples of fintech services in the banking industry are digital cash, payments, currency, invoicing, cryptocurrency, digital mortgage, digital remittance, digital investment, digital leasing, digital cash management, digital factoring, digital insurance, digital advising, crowdfunding, digital lending (Jascha & Alexander, 2017; Virdi & Mer, 2023). Pakistan government is to regulate fintech adoption in banking industry. To attain sustainable performance, Banks and fintech businesses must work collaboratively to achieve synergistic benefits rather than competing by the Islamic banking norms and Sharia law (Al-Binali et al., 2023).

During pandemic of covid -19, fintech importance has increased (Singh & Bhusan, 2023) and it has supported many governments in bringing the relief measures (Malokani, 2023) realizing sustainable performance, providing better tax relief schemes, delivering the government-based stimulus funding to many businesses in small to small and medium enterprises and households amongst other aspects along with keep quality of products and services (Lontchi et al., 2023). In this era of globalization, digitalization has created a huge impact on financial and banking industries all around the world. fintech is combination of two words financial and information technology (Legowo, 2020). It is recent technology that eases business model that is related to financial services providers. Following are some dimensions of fintech, such as creating, changing, improving, disruption and collaboration. Artificial intelligence and machine learning, big data, data analytics are 4 main technologies that are widely used by FinTech. Applications that are used for the fintech to gain sustainable performance are the following, crowdfunding platforms, mobile payments, robo-advisors, insure tech, reg tech (Haq, 2021). With all of these tools, major changes in banking sector will bring better sustainable performance (Yudaruddin, 2023).

Green Banking

Green banking is the most recent concept in banking industry to reduce pollution and increase efficiency (Bukhari et al., 2023). The main agenda of green banking is to comply with corporate social responsibility which is the main building block of every organization (Hadi et al., 2023). This can take numerous forms, such as utilizing Internet banking instead of branch banking,

paying bills online rather than sending them, creating commercial deposits and money market accounts with online banks, and using solar and wind energy instead of power consumption, etc. It is a type of banking practiced in specific location and approach that aids in the reduction of internal and external carbon footprints (Miah et al., 2023). The banks may minimize their carbon footprints by implementing steps such as paperless banking, energy awareness, mass transit, green construction, going online, saving paper, using solar & wind energy (Chaurasia, 2014). Green banking plays an important role in reducing credit risk, legal risk, and reputation risk. Several researchers propose green banking solutions such as carbon credit trading, green financial products, green mortgages, carbon footprint reduction, energy awareness, and green buildings, and social responsibility services are various services that benefit society (Bukhari et al., 2023).

Banks use green banking methods such as environmental training, the use of energy-efficient equipment, the construction of green buildings, and so on. Due to these goals, banks can fulfill their objective of sustainable performance (Shaumya, 2017; Hassan & Rahman, 2023). In line with global agenda, International Finance Corporation (IFC) and State Bank of Pakistan (SBP) have agreed to collaborate (IFC, 2018) to develop and support the green banking practices in Pakistan (Williams, 2023). SBP has taken an initiative towards green banking practices with the issuance of the circular upon green banking guidelines in October 2017. The Green Banking Guidelines (GBG) are designed to enhance banks' and DFIs' sensitivity to environmental risks, fulfill their environmental obligations, and provide financing for the transformation of the economy into one that is resource- and climate-efficient. Banks and DFIs are required to put in place the suitable mechanisms to identify, evaluate and reduce environmental risks to avoid the significant financial losses, although the ultimate responsibility for ensuring the compliance with environmental laws and regulations rests with borrowers (Green Banking Guidelines, 2017). This regulation consists of three major aspects leading towards sustainable perforce of whole sector.

According to the regulation the banks under the control of SBP have to work on three banking aspects (a) Enhancing financial stability by realizing, overseeing, minimizing environmental risks within financing portfolios; (b) Promoting the "green" market by capitalizing on emerging financing opportunities in clean energy, resource efficiency projects, with focus on facilitating business transactions; (C) Seeking own impact reduction through potential re-engineering of banks and DFIs' operations to minimize environmental and societal impact (SBP, 2017). All of these aspects are the basis of developing sustainable performance of the banks and if the banks can focus aggressively on these aspects, they can easily become the market leader and can help grab the attention of DFI from foreign countries (David & Venkatachalam, 2018). In this drive, to support governmental measures aimed at shifting a nation's economy toward one that is low carbon and climate resilient, the financial sector is recognized as having a role through green banking. Thus, green ranking aims to refocus banking operations, products, and services to lessen the impact of banks upon the environment and the economy (Khan et al., 2023). It also aims to encourage environmental consciousness as part of organizational culture (Afridi et al., 2023).

Sustainable Performance

Maintaining a resource for a long period is termed sustainability (Kuhlam, 2010). Sustainable performance refers to performance of an organization in all aspects. It is a new emergent term that addresses the environmental, social, and economic aspects of the organization three main

dimensions of sustainable performance are following. The economic dimension, environmental dimension, and social dimension, this idea is called the triple bottom approach (Hameed et al., 2021; Ahmad et al., 2023). Economic performance of a bank refers to its revenues, profitability, and growth (Khawaja et al., 2023). Up till near the past, main goal of finance was considered to increase the wealth of the shareholder (Sitinjak et al., 2023), now the triple bottom approach has multifold it (Ibrahim et al., 2023). The environmental dimension refers to environmental performance such as firm efficiency in meeting and exceeding the expectations of society. It includes the number of the resources that an organization uses in its operation such as land, energy, water, waste, air emissions, chemical residues, and effluents. Thus, social dimension refers to the principles of the social responsibility, policies, programs, and observed outcomes related to firm societal relationships and profit is the old game plan (Malsha, 2020; Sahu et al., 2023).

Environmental & Social Dimensions

According to Saenz (2023) environmental dimension of the company is its ability to fulfill and exceed societal standards in terms of its care for environment. This goal goes beyond following law as it is written and takes a proactive approach to future environmental concerns. Number of resources an organization utilizes in its operations, including energy, land, and water, as well as waste, air emissions, chemical residues, and effluents that are left over as of its operations, are all considered in determining environmental performance of organization (Beck & Ferasso, 2023). Evaluation of environmental performance is still limited since it focuses on short-term environmental effects including resource depletion, pollutant emissions, energy consumption, waste generation instead of long-term environmental effects of enterprises' activities (Kestane, 2019). Social performance is defined as "design of a corporate organization's guiding principles of social responsibility, guiding actions of social awareness, guiding policies, initiatives, and calculable outcomes as they relate to firm's societal interactions" (Messmann et al., 2023). It includes topics likewise employee relations, health & safety, pay to cover living expenses, non-discrimination, percentage of staffs who quit jobs, education and career advancement (Stamm, 2023).

Fintech & Sustainable Performance

The technology advancement will lower service costs for bank clients and money senders, but it will have an influence on bank profitability by lowering money transfer fees and commissions. Increasing the efficiency and effectiveness of the banking sector using fintech (John, 2017). It helps the banks maintain their competitiveness over a period (Dwivedi, 2021). Additionally, it improves customer interaction strategies, strengthens brand loyalty, as well as increases digital services, as well as performance and bringing in new clients (Mainardes & Freitas, 2023). The modern channels of the payments like internet banking, mobile banking, ATMs, all are possible due to the adaptation of fintech in the banking industry to provide quality and convenience in the daily operations of and individuals and businesses in Pakistan. Hence the advancement in daily operations due to fintech will lead the organization to sustainable performance due to the low use of paper and low carbon footprint of the bank`s customers (Siddik, Rahman & Yong, 2023).

Fintech & Green Banking Practices

Due to its creative character and significant influence on the energy sector, fintech is regarded as a disruptive factor. It significantly affects the social, environmental, and ecological benefits of promoting use of funds for the energy efficiency as required for sustainable enviornment. As

energy use declines due to more automation and better data analytics, fintech has the potential to greatly enhance the adoption of energy efficiency and renewable energy solutions (Liu, 2021) so it can be used as cost cost-effective tool to achieve green goals of green banking (Yang et al., 2023).

Green Banking & Sustainable Performance

The banking industry of Pakistan also aims to save money on its operational activities due to high inflation rate. Economic benefits are linked to green banking activities (D'Angelo et al., 2023). In terms of marketing their image as a socially responsible bank (AlAjmi et al., 2023). To attract more socially motivated consumers in Pakistan (Fatma & Khan, 2023). Banks have embraced energy-efficient technologies, the on-site renewable energy generation, and paperless banking to save their operating expenses. Previous research shows that an entity can function sustainably while also achieving well-being to extend lifespan of other entities (Anthonypillai Anton Arulrajah, 2020). Sustainability is not a temporary solution. The phrase "sustainable performance" refers to the combination of three (Triple Bottom Line) factors about following: economic, social, and environmental. Thus, the effective handling, storage, retrieval, sharing of documents in paperless environment boosts banking operations' speed, security and accuracy (SBP, 2017).

Research Hypothesis

H1: Fintech Adoption Leads to Sustainable Performance in Banking Industry in Pakistan.
H2: Fintech Adoption leads to green banking practices in the Banking Industry in Pakistan.
H3: Adaptation of green banking leads to the sustainable performance of banks in Pakistan.

RESEARCH METHODOLOGY

The approach used in the research is deductive approach and the nature of the approach used in the research is quantitative. In this research, deductive approach implies that study started with a clear hypothesis related to the research topic. Researchers have formulated a theoretical framework based upon existing literature or prior knowledge. Subsequently, they would collect and analyze quantitative data to either support or refute these initial hypotheses. With the help of sampling techniques, quantitative research sends out online questionnaires, surveys, polls to gather data from current and future clients. The hypothesis for the research is made before the collection of data and the hypothesis is verified after collecting information. The research type is exploratory. The research is causal research i.e., focusing on cause-and-effect relationships. Causal research is utilized in studies to determine the link among different variables. Through casual research, it can be learned that either a variable causes or affects other variables' value (Schuch, 2023).

All employees of banking industry all over Karachi are research population. Sample covered a wide range of banking professionals (officers & Managers). Respondents were aware of fintech and green banking practices. This made findings of research relevant and generalizable to the industry. A questionnaire was used to collect data from a sampling frame (Garber et al., 2023) of randomly selected banks in Karachi. To prevent bias toward a particular bank of economy, organization, respondent characteristics, random sampling is used to ensure that respondents are representative of the population of interest. It serves as the main source and repository of information for surveys given to Karachi, Pakistan's banking customers. Two different methods have been used to collect survey forms: a Google form and a hard copy. We asked respondents to return their completed questionnaires in the hard copy or online using the Google Form. Data

were gathered from employees of Karachi, Pakistan. Therefore, the data is collected through the questionnaire. A structured /close-ended questionnaire based on a 5-point Likert scale will be administered.

Table 1
Research Instrument

Variables	Authors	No. of items	Scale
Fintech adaptation	Dwivedi (2021)	08	1-5
Green banking practices	Malsha (2020)	10	1-5
Sustainable performance	Dwivedi, Alabdooli and Dwivedi (2021) Malsh, Arulrajah, senthilnathan (2020)	09	1-5

Data Analysis Method
For the analysis of data, SMART PLS software a very popular software (Wong, 2013) was used to examine the information collected. The structural equation modeling techniques were used to assess the relations by checking the inner and external models by using the algorithm all the values were found within acceptable range. Hypotheses were assessed using the bootstrapping technique.

RESULTS OF STUDY

The data was collected from almost 302 respondents who were working in the banking sector. There are 32 banks in Pakistan which include public sector commercial banks, specialized banks, local private banks, local private banks, Islamic banks, and foreign banks. Most of the respondents were from 2 main commercial banks United Bank Limited, Habib Bank Limited, and from first Bank of Pakistan Meezan Bank. Data was collected from United Bank Limited, National Bank Limited, Allied Bank, Bank al-Habib, Meezan Bank, MCB Bank, National Bank of Pakistan, JS Bank, Bank of Khyber, Habib Metropolitan Bank Limited, Bank Al-Falah Limited, Allied Bank Limited, Bank Al-Falah Limited, Askari Bank Limited, Soneri Bank Limited and Faysal bank.

The following table summarizes respondents' demographics, including age, gender, education, working experience, and job Positions. Around 50% of the data was collected from the youth of Pakistan which is the most influencing factor of the country and thus provide the important information.

Table 2
Demographic Information

		Frequency	Percentage
Age	Between 20-30 years	147	48.84%
	Between 30-40 years	87	28.90%
	Between 40-50 years	50	16.61%
	Over 50 years	17	5.65%
Gender	Female	117	38.87%
	Male	184	61.13%
Education	Bachelor	177	58.80%
	Master	122	40.53%
	PhD	2	0.66%

Table 2A
Demographic Information

Working experience	1 to 5 years	118	39.20%
	5to 10 years	90	29.90%
	Experience more than 10 years	56	18.60%
	Less than one year	37	12.29%
Job position	Assistant Manager	67	22.26%
	Manager	92	30.56%
	Officer	110	36.54%
	Other	32	10.63%

Convergent Validity (CV)
The CV is a stronger measure of internal consistency than Cronbach alpha (Hair et al., 2014). Table 3 displays CR value for each variable. Composite reliability for all variables was greater than 0.5, ranging from 0.942 and ending at 0.965. Cutoff values for Rho A >0.70 so extracted values range from 0.958 and 0.974, these are all acceptable. Standard value average variance extracted started from 0.658, ends at 0.854 and are acceptable as AVE should be greater than 0.05.

Table 3
Convergent Validity

Construct / Variable	CA	RHO_A	CR	AVE
Fintech	0.95	0.964	0.958	0.743
Green Banking	0.942	0.958	0.95	0.658
Sustainable performance	0.965	0.974	0.972	0.854

Discriminant Validity
Discriminant validity test was run on data to check validity and it is one of recommended tests. Thus, DV is measured over 2 different criteria, Furnell & Larker, second one hetero trait Mono trait. The Furnell and Larker determines that how much variation is shared among the latent variables of the model. According to (Sánchezlkjklml, October 22, 2015) value less than 1 shows a true correlation between 2 constructs. In the analysis, its value ranges from 0.307 to 0. 133. For fintech to green banking, value is 0.133, for fintech to the sustainable performance it is 0.101 and green banking to the sustainable performance is 0.307 wherein from results, these are all acceptable. Thus, these results are vital in providing the information about the discriminant validity.

Table 4
Furnell and Larker

	Fintech	Green Banking	Sustainable Performance
Fintech	0.862		
Green Banking	0.134	0.811	
Sustainable Performance	0.099	0.307	0.924

Table 5
HTMT

	Fintech	Green Banking	Sustainable Performance
Fintech			
Green Banking	0.133		
Sustainable Performance	0.101	0.307	

Collinearity Statistics (VIF)
All values between different variables greater than 1 so variables have moderate relationship in variables.

Table 6
Collinearity Statistics (VIF)

	Fintech	Green Banking	Sustainable Performance
Fintech		2	2.16
Green Banking			1.018
Sustainable Performance			

Q Square
Blindfolding construct cross-validated redundancy was used as a predictor, which is relevance of model based on Q square criteria. Model has good predictive relevance if value of Q square is greater than 0. It shows that variable value is higher than 0, value of women entrepreneurs is 0.312.

Table 7
Q-Square

	S	SSE	Q^2 (=1-SSE/SSO)
Sustainable Performance	1800	951.753	0.5282

Hypothesis Testing
As per Wong, (2013) instruction data was assessed by evaluating inner and outer measure the following test was run to test the hypothesis. There are three hypotheses in the present research. These were analyzed and investigated using structural equation modeling. Bootstrapping path coefficients were shown. The values of P and T, mean of the sample, and the standard deviation means are shown in below table. T statistics Values should be larger than 0.05 and the value of P must be less than 0.05. These values are standard acceptable values (Hair, 2019). The Table given below illustrates that the P value of fintech and green banking is 0.09 which shows that fintech has a positive relationship with sustainable banking performance as less than 0.05 and the T value is 2.613 which is greater than 0.05. There is a significant relationship between green banking and sustainable banking performance as P value is less than 0.05 which is 0.001 and T- value is 5.581 which is greater than 0.05. There is insignificant relationship amid fintech and Sustainable performance because value of P is 0.276 which is not less than 0.05 and T-value is 1.091.

Table 8
Hypothesis Testing

Variables	OS	SM	STDEV	t	P
Fintech -> Green banking	0.134	0.139	0.051	2.613	0.009

Fintech-> Sustainable Performance	0.059	0.06	0.054	1.091	0.276
Green Banking -> Sustainable Performance	0.299	0.302	0.054	5.581	0.001

Mediating Effect

There is significant relationship between fintech, green banking, and sustainable performance as its P-value is less than 0.05 that is significant, and its T-value is 2.345 which is greater than 0.05.

Table 9

Mediating Effect

	OS	SM	(STDEV)	t	P
Fintech-> Green Banking -> Sustainable Performance	0.04	0.042	0.017	2.345	0.019

DISCUSSION

It has been observed that fintech and green banking in the banking industry in Pakistan impact the sustainable performance of Banks in Pakistan. Fintech influences green banking because of digitalization and innovation. Collaborative and inflated outcome of fintech and green banking in the Pakistani banking industry presents a promising avenue for improving the sustainable performance of banks. Fintech's technological innovations and green banking's eco-conscious practices, when combined, have potential to drive positive change, foster innovation and create more sustainable, responsible banking sector in Pakistan, all while catering to evolving needs and values of customers & investors. Pradeep Dwivedi observation in 2021 highlights standing of recognizing and capitalizing on these synergies for long-term benefit of the banking industry and environment. This effort, if aligned with general triple bottom line will lead to developing multiple novel venues for banks to explore new business chances the banks can offer better and enhanced digital security to customer, which is one of main concerns in Pakistan. Based upon similar fintech power, they can collaborate at any micro level to facilitate financial transactions. As we have witnessed in India casual singers in wedding services are collecting tips over QR codes (Moneycontrol.com., n.d.). There are some other venues and thousands of others can be opened.

Hypothesis 1: The first aim of study was to know relationship between fintech and sustainable banking performance. Fintech adoption leads to sustainable performance in banking industry in Pakistan. This hypothesis is rejected. According to analysis interpretation, its value is greater than 0.005 and its value is 0.279 which means that it is insignificant. Hypothesis is supported by findings of Macchiavello and Siri (2022) who have also raised concern over this relationship in developing countries. Reason for rejection of this hypothesis is that working environment in local context of Pakistan, being a developing country is quite acceptable due to high concerns regarding hacking and electricity disruption issues. As employees are not properly and fully trained before the deployment of the fintech in operations, the employees related to such jobs would be reluctant to use them capably and that is why their Responses are not in favor of this hypothesis.

Hypothesis 2: According to our research, it is concluded that Fintech has a positive effect upon Green Banking Practices. The research was conducted in banking sector of Pakistan to analyze impact of Fintech on Green banking. The p-value between Fintech and Green Banking is 0.009,

which is highly acceptable. Similar findings have been reported by Campanella et al. (2022). Henceforth based upon the acceptance of this hypothesis, we can understand that the role of fintech is not limited and can be multifold with the help of the supporting mediating tools like green banking practices adopted by the employees and supported by the management of the bank.

Hypothesis 3: According to our research, it is concluded that Green Banking Practices has the positive effect on the Sustainable Performance of Bank. Our third hypothesis, that Adaptation of green banking services leads to sustainable performance of banks in Pakistan is accepted as its p-value is 0.001 which is less than our cutoff value. Similar findings have been reported by Malsha (2020). Hence, third hypothesis supports the understanding that in developing nations like Pakistan, efforts of governmental bodies are coming alive, like, Green Banking Regulation 2017 is putting burden on banks to adopt green banking and this will bring sustainability in the sector.

CONCLUSION

It has become a major problem for bank to get competitive advantages to sustain performance of the bank for a long time while also keeping it up-to-date and improving. A higher level of technology inside banks, followed by inventive creativity in the products and services the banks offer, can, however, further improve bank performance (Dwivedi, 2021). The study concludes that financial technology has the substantial impact on the financial performance of Pakistani commercial banks. The commercial banks could invest in improving their financial technology since it would increase the financial performance of Bank. (Ibrahim, 2023) The preservation of environment is a concern shared by many organizations, and these organizations' strategic decisions are often linked to preserving the environment for the benefit of coming generations. Therefore, purpose of this study is to determine how Pakistani banking practices have changed about their performance in terms of sustainability. With the help of the existing literature, the terms "Fintech, "green banking practices," and "sustainability performance of the banks" have been conceptualized in this context. The significance of the green banking practices has been emphasized as mediating variable in relationship between fintech and sustainable performance of banks.

For strategic emphasis, financing and investment portfolio assessment, assessments, creation of financial instruments, financial products, and financial services, and consumption of natural resources in internal operations of banks/DFIs green banking provides a paradigm shift from the business-as-usual approach. As it is concluded from our study fintech has a great impact on the green banking practices in Pakistan and green baking practices have a positive relationship with the sustainable performance of bank. Banks in Pakistan can better service their customers as the result without needing to enlarge their branch offices. The banking industry of Pakistan has enhanced its offerings in response to rise in competitive pressure and need for economic growth brought about by the advent of the globalization. This will also help the organization to reduce the physical visit of the customer to the branches for the nominal work as when all the services are through the fintech portal then there will be a minimum requirement of paper or hard copies and this will add to SDG goal # 12 of the banks i.e. their effort will be showing responsibility towards reducing the carbon footprint of customer, as well as paper will be saved and SDG goal # 15 life on land will serve as fewer trees will be cut for these official work (SBP, 2017).

Recommendations

As a result, organizations adopt fintech to gain the advantage of sustainable performance, and by attaining fintech organizations/banks move towards digitalization which initiates concept of green behavior among employees. I would like to recommend to professionals of the banking sector to bring automation into system by adopting fintech and should move towards the green banking concept for efficient use of energy resources and to attain sustainable performance. The SBP must plan and implement adaptation of fintech and green banking and should force the banking and financial Industry. Organization and banks must develop good relationships with the fintech companies to keep updated with the new updates and change according to it. Long-term collaboration and strategic coordination with FinTech companies can help the banks attain sustainable performance. Study has significance for academics, professionals, and upcoming researchers in related fields, particularly when it comes to topic of green banking's mediating function between fintech and sustainable performance of Pakistani banks. Properly trained staff to adopt latest trends and practices will bring the banks to cutting edge of banking industry and they can always have first mover advantage concerning technology adoption and implementation. A proper training program needs to be erected before the implementation of a FinTech tool. The banks should encourage more online banking use as it has stronger positive impact on financial performance of commercial banks than mobile banking does. Commercial banks should, at large, aim to advance financial technology as it helps banks operate financially better.

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