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Driving Sustainable Performance of Banks through CSR, Green HRM, and Green Banking Practices: Mediation of Employee Green Behavior and Moderation of FinTech Adoption

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Abstract: This research explores the effect of green human resource management practices, CSR activities, and green banking practices on the sustainable performance of banks in developing economies, with employee green behavior as a mediator and financial technology adoption as a moderator. Data were gathered for the study from 620 branch managers in the banking sector using self-administered printed and online questionnaires. We applied partial least squares structural equation modelling (PLS-SEM) to examine direct and indirect associations among the variables, and the results indicated that green banking practices significantly impact banks' sustainable performance. Moreover, it was discovered that FinTech partially moderates the relationship between green banking practices and sustainable performance, and the adoption of GHRM practices and CSR activities improves banks' sustainable performance. This study stands out by looking at the combined effects of green human resource management practices, CSR initiatives, and green banking practices on sustainability. This area has not received much attention in previous studies. It emphasizes how crucial employee green behavior and FinTech adoption are to maximizing banks' sustainable performance. Furthermore, this study invoked the Social Exchange Theory, Resource-Based View, AMO Theory, Stakeholder Theory, and Institutional Theory to examine the relationship of study variables. Prominently, this research strengthens the 2030 Plan of the United Nations for Sustainable Development, particularly in relation to SDG 8, SDG 9, and SDG 13.

Keywords: Banks' sustainable performance, CSR activities, employee green behavior, financial technology, GHRM practices, green banking practices, PLS-SEM.

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INTRODUCTION

Sustainable Development Goals and the United Nations' 2030 plan have positioned sustainable development as the highest global priority. Through capital allocation, responsible financing, and the encouragement of ecological practices, financial institutions, especially banks, play an important role in advancing this agenda. The banking industry's importance to sustainable development is emphasized by its ability to increase funding for environmentally friendly initiatives and encourage companies to implement recyclable practices. For example, by supporting initiatives that reduce environmental damage and diminish the risks associated with climate change, employee green behavior directly supports SDGs 12 and 13 (Hou, Bello-Pintado, & García-Marco, 2025; Zhang, Zhang, & Managi, 2019). FinTech innovations also support SDG 9 by promoting efficiency, novelty, and digital transformation in banking institutions (Shen, Fu, Pan, Yu, & Chen, 2021). GHRM practices, CSR activities, and green banking improve ethical governance and worker participation, contributing to SDG 8 by ensuring sustainable economic growth and fair working conditions (Renwick, Redman, & Maguire, 2013). A recent study emphasizes how crucial green banking is becoming for aligning financial practices with the SDGs. Khan, Hameed, Khan, and Khan (2024) determined that sustainable banking activities are consistent with international sustainability values and support the achievement of national environmental goals.

Green finance and FinTech are crucial for regulators to attain the Sustainable Development Goals and the Paris Agreement, particularly in developing countries (Eang, Clarke, & Ordonez-Ponce, 2023). Creating a truthful and efficient digital payment structure at the international and national levels is an imperative tactic for lowering disparity and refining eco-friendly sustainability (Kumar, Sureka, Lim, Kumar Mangla, & Goyal, 2021). By using leading-edge technology like green banking, online banking, blockchain, and other technologies, banking institutions are significantly advancing the country's sustainable development and the funding for a variety of environmentally friendly plans, as well as the development of green industries, energy efficiency, clean technology, and clean energy (Chen, Siddik, Zheng, Masukujjaman, & Bekhzod, 2022).

Thus, the primary emphasis of this research is on the elements that impact the sustainable performance of banks (BSP) in a developing nation such as Pakistan. Ecological sustainability, economic development, and technological revolution are not new issues, but they are becoming increasingly critical to incorporate into a single study. The abbreviation fintech stands for "businesses or organizations that link financial services with new, inventive technologies like blockchain" (Dorfleitner, Hornuf, Schmitt, & Weber, 2017). Fintech is the term for the usage of technological novelty to bring financial products and services to individuals (Dwivedi, Alabdooli, & Dwivedi, 2021).

Green HRM is one of the most significant factors in making an association more sustainable (Yong, Yusliza, & Fawehinmi, 2020). Current studies show that little is known about how GHRM and green service behavior are associated, which is critical for empirical research (Rubel, Kee, & Rimi, 2021). The term "green leadership" defines the activities of leaders who boost their followers to attain sustainable objectives and go beyond what is considered the sustainable effectiveness limit (Grosfeld, Scheepers, & Cuyvers, 2024).

The purpose of this study is to determine current banking practices in emerging economies such as Pakistan and to establish a sustainable strategic action plan within the scope of attitudes and perceptions of banking sector stakeholders. In this context, a survey will be conducted to collect data from commercial bank branch managers to examine the relationships between green banking, CSR, EGB, FinTech, HRM practices, and sustainable performance. Consequently, strategic action plans will be suggested to enhance the sustainable performance of the banking sector and make this study unique in any worldwide setting.

The remainder of this paper is structured as follows: The next section outlines the review of literature and formulation of hypotheses, followed by methodology (research design), findings and interpretation, results of hypotheses testing, discussion of findings, practical and theoretical implications, limitations of the study, and concludes with directions for future research. A comprehensive conclusion is also given at the end of this paper.

REVIEW OF LITERATURE AND FORMULATION OF HYPOTHESES

Banks' Sustainable Performance and Green Banking Practices

Rehman, Kraus, Shah, Khanin, and Mahto (2021) investigated the association between GBPs and their effect on long-term performances of the banks using the idea of socially responsible investing. Similarly, Neruja and Arulrajah (2022) examined how GB practices affected Sri Lankan banks' performance over the long run. The study concluded that GBPs have a long-term, favorable, and considerable influence on sustainable performance. An entity's sustainable act can be evaluated using several metrics, including recycling, waste reduction, pollution control, and low sustainable emissions (Gallardo-Vázquez & Sánchez-Hernández, 2014; Joshi & Risal, 2018).

Solar panel construction, paperless banking, green finance, reducing daily light consumption, using less gas and petroleum, investing in ecological schemes and marketing, recycling, budgeting for environmental risk funds, and sustainable risk valuation of projects are measures banks have adopted to address sustainability issues (De Vass, Shee, & Miah, 2018). Therefore, it can be argued that GB provides banks with a means to enhance their sustainable efficiency while reducing emissions and protecting the environment. The following hypotheses are proposed based on this discussion:

Hypothesis 1

H_{1a}: GB practices substantially influence the Sustainable performance of the banking institutions. (Economic).
H_{1b}: GB practices significantly influence the sustainable performance. (Social).
H_{1c}: GBPs significantly impact the Sustainable performance. (Environmental).

EGB and Green Banking Practices

Employee environmentally friendly behavior is characterized by ecological actions, such as conserving resources, recycling, participating in ecological initiatives, and promoting sustainable practices (Bilal, Alawadh, Rafi, & Akhtar, 2024; De Roeck & Farooq, 2018). Green behavior refers to ethical or sustainable actions emphasizing ecological sustainability, such as reducing waste and recycling (Bilal et al., 2024; Khan, Saengon, Alganad, Chongcharoen, & Farrukh, 2020). In reaction to today's rising ecological anxieties and the introduction of harsher ecological legislation in several nations, corporations are increasingly encouraging environmentally conscious behavior among their employees, and they are becoming more receptive.

Before applying eco-friendly measures and promoting sustainability, staff must be made mindful of the consequences of their actions for green banking practices to be effective (Bukhari, Hashim, & Amran, 2020). Eco-friendly employee behavior affects empowerment, communication, and leadership (Ashfaq, Akhtar, Akhlaq, Yousaf, & Ullah, 2026; Ribeiro, Gomes, Ortega, Gomes, & Semedo, 2022). Once individuals know the implications of environmental acts, they become more responsive. The cornerstone of a sustainability strategy of banks and performance is employee green behavior, which stems from actions that have a beneficial, eco-friendly influence (Khan et al., 2020). Hence, the subsequent suggestion is concluded:

Hypothesis 2

H2: EGB is significantly influenced by GBP.

Sustainable Performance and EGB

Ones and Dilchert (2013) describe EGB as a quantifiable human behavior that either favors or negatively impacts environmental sustainability goals in an employee's workplace. Double-sided printing, electricity conservation, Paper recycling, energy-efficient apparatus, and waste evasion are all instances of employee green behavior.

According to Farooq, Yusliza, Muhammad, Omar, and Nik Mat (2023) one tactic used by businesses to boost their sustainable performance is EGB.

A business's performance in all areas and for all factors that contribute to business sustainability is referred to as sustainability performance. The economic, social, and environmental facets of corporate management overall and corporate sustainability management in specific are addressed by the recently developed phrase "sustainability performance management" (Schaltegger & Wagner, 2006).

Prior research shows that an entity's sustainability performance achieves well-being while considering the lasting viability of future entities. Sustainability is a long-term solution. Three aspects (social, economic, and environmental) combine to generate the term "sustainable performance." Interestingly, the Triple Bottom Line dimensions have been uniquely recognized by the majority of investigations. Only a small portion of the literature, however, examines how these social, environmental, and economic aspects are interconnected (Giuliodori, Berrone, & Ricart, 2023). Hence, we formulate the subsequent proposition.

Hypothesis 3

H_{3a}: EGB significantly influences the sustainable performance (Economic).
H_{3b}: EGB behavior significantly influences the sustainable performance (Social).
H_{3c}: EGB significantly influences the sustainable performance (Environmental).

Sustainable Performance and GHRMP

GHRM activities require performance management measuring methodologies, since they give individuals instant feedback on their environmental efforts (Chen et al., 2016). Employees can therefore evaluate their performance against the expected environmental performance (Reinhardt & Stavins, 2010). Studies show that when people are exposed to the critical victory basics evaluated by green performance supervision, they are more inclined to modify their conduct (Darvishmotevali & Altinay, 2022).

An incentive plan called "green compensation and rewards" is intended to appeal, retain, and encourage people to support eco-friendly causes through both monetary and non-monetary means (Mehak & Batcha, 2024). Green rewards greatly improve environmental performance by fostering the best possible work-life balance (Jabbar & Abid, 2015). Staff are more inclined to trial green projects when they receive prizes, and greetings are based on their ecological performance (Darvishmotevali & Altinay, 2022).

Training employees is essential for equipping them with the familiarity and abilities necessary to make wise conclusions on GHRMP (Ojo & Fauzi, 2020). Green hiring and selection procedures are a crucial component of GHRMP. Good hiring and selection procedures are crucial parts of a company's HRM entrance stage. The selection and hiring processes add to their actual relevance. Eco-friendly hiring demonstrates an organization's desire to collaborate in improving environmental performance by attracting and keeping individuals who share similar values (Masri & Jaaron, 2017). Green recruiting demonstrates the organization's environmental performance and influences internal hiring's appeal to businesses (Farrukh, Meng, Wu, & Nawaz, 2020).

Hypothesis 4

H_{4a}: Sustainable performance and GHRMP are positively correlated (Economic).
H_{4b}: Sustainable performance and GHRMP are positively correlated (Social).
H_{4c}: Sustainable performance and GHRMP are positively correlated (Environmental).

GHRMP and EGB

Many academics have identified and theorized GHRMP as activities that comprise eco-friendly hiring and staffing of workers with green familiarity and awareness; eco-friendly training to improve workers' competencies, green skills, and knowledge; green performance evaluation using recognized green values for evaluating performance; and eco-friendly prizes to offer motivation based on the accomplishment of the businesses' green objectives (Dumont, Shen, & Deng, 2017; Tang, Chen, Jiang, Paillé, & Jia, 2018).

EGB among employees is a reflection of their own environmental consciousness (Norton, Parker, Zacher, & Ashkanasy, 2015). It conceals equally in-role green performance and extra-role (voluntary). Eco-friendly responsibilities that are essential to the performance assessment of employees are referred to as in-role eco-friendly conduct. Extra-role eco-friendly conduct describes an employee's voluntary eco-friendly actions that surpass their formal responsibilities and are not recognized in their performance evaluation (Batool, Rasheed, Malik, & Hussain, 2015; Paillé & Boiral, 2013). Observational studies typically indicate that green employee authorization, green task behavior, green job creation, and organizational citizenship toward the environment are all positively associated with GHRMP (Fawehinmi, Yusliza, Mohamad, Noor, & Muhammad, 2020; Paillé & Boiral, 2013).

The mutuality of social exchange theory (SET) norm may serve as a foundation for explaining the connection between GHRMP and green behaviors, both task-related and voluntary. Employees are expected to demonstrate green behaviors in response when organizations show their commitment to ecological management by setting clear green objectives, providing eco-friendly training and development, implementing well-organized green performance reviews, and establishing green reward systems (Klein & Shtudiner, 2021). Therefore, the subsequent hypothesis is proposed.

Hypothesis 5

H_5: Employee green behavior is substantially affected by GHRMP.

CSR Activities and Banks' Sustainable Performance

Few researchers have analyzed the connection between CSR and environmental performance in developing nations, although many have examined the association between CSR and financial and non-financial performance (Farooq et al., 2023). A current study observed the link between CSR and environmental performance for ongoing business success (Maícas et al., 2023). The research concluded that CSR programs positively advance the eco-friendly performance of an organization, indicating that CSR programs allow a business to replicate its operations and encourage employees to reduce both solid and liquid waste. Businesses that financially support CSR initiatives have a higher chance of attaining ongoing sustainability, cost savings, improved quality, flexibility, and delivery.

Moreover, studies have observed how CSR relates to various performance metrics across US electric utilities, such as governance, social, economic, and environmental factors (Ait Sidhoum & Serra, 2017). The research concluded a strong relationship between economic, social, and environmental performance. It also stated that eco-friendly technology benefits financial well-being and supports the creation of a better eco-friendly system, which enhances sustainability and economic outcomes. Additionally, environmental performance is significantly influenced by how CSR is perceived (Channa, Hussain, Casali, Dakhan, & Aisha, 2021). Even so, CSR had no discernible effect on eco-friendly performance (Kraus, Rehman, & García, 2020).

Management commitment to CSR can advance eco-friendly performance by reducing pollution and material surplus during the production process, leading to decomposable products (Rivera et al., 2017). Corporate social responsibility initiatives are well-defined in this study as those that organizations assume for the benefit of society and the environment to attain overall organizational performance, including environmental performance. For this reason, the hypothesis developed is given below.

Hypothesis 6

H_{6a}: Corporate social responsibility activities significantly impact Banks' sustainable performance (Economic).
H_{6b}: Corporate social responsibility activities significantly impact Banks' sustainable performance (Social).
H_{6c}: Corporate social responsibility Activities significantly impact Banks' sustainable performance (Environmental).

CSR Activities and EGB

The term "employee green behavior" refers to activities undertaken by staff members that benefit the environment (Unsworth, Dmitrieva, & Adriasola, 2013). Green behavior involves using eco-friendly practices to

perform tasks sustainably and responsibly. One of the many tactics used by businesses to improve their eco-friendly performance and meet sustainable objectives is green behavior. Larson and Almeida (1999) propose that feelings can be used to forecast subjective behaviors. Prior research has examined how employee welfare affects green behavior (Coelho, Verga, & De Almeida, 2025; Erreygers, Vandebosch, Vranjes, Baillien, & De Witte, 2019; Hwang & Hyun, 2012; Kim, Hur, Moon, & Jun, 2017). High-well-being workers give their jobs more consideration and effort (Day & Randell, 2014).

The relationship between employees' well-being and their participation in environmentally friendly workplace practices is also made clear by social exchange theory. Staff assume the behavior in reaction to favorable or unfavorable outcomes of societal interchange, according to SET. Danna and Griffin (1999) assert that behavioral intentions are a direct result of well-being. Moreover, Su and Swanson (2019) suggest that employees are more persuaded to adopt green workplace practices when their well-being is higher. Employers should encourage eco-friendly conduct by enhancing workers' welfare. Raineri and Paillé (2016) assert that employees engage in eco-friendly actions when they see that their employer is involved in eco-friendly initiatives. Therefore, we suggest the subsequent proposition.

Hypothesis 7

H_7: CSR activities substantially affect the employees' green behavior.

Employee Green Behavior, GBP, and Sustainable Performance

Mustafa et al. (2025) investigated the connection between GB activities and how they influence banks' environmental performance using the lens of Socially Responsible Investment. The outcomes show a strong optimistic relationship between green finance programs in emerging nations such as Pakistan, policy-related procedures, and everyday business processes. Similarly, Tilahun, Berhan, and Tesfaye (2023) explored the impact of GBPs on the sustainable performance of Sri Lankan banks. According to the study, GB practices had a favorable and noteworthy influence on the sustainable performance (Liu & Kong, 2021).

Joshi and Risal (2018) conducted a multiple regression investigation to examine how GB's operations affected Nepali banks' eco-friendly performance. The research indicates that banks' green policies, environmental training, and the availability of energy-efficient apparatus significantly impacted their eco-friendly performance, while customer-related activities (green financing and green projects) had statistically insignificant effects. Therefore, by integrating businesses in green banking activities and supporting ecological projects, banks can reduce carbon emissions, improve their eco-friendly performance, enhance their reputation, and ultimately achieve sustainable economic growth.

According to DuBois and Dubois (2012) organizations practice EGB as one of their tactics to improve their performance in eco-friendly sustainability. The strains of the natural environment affect workers' daily lives, making it difficult for a business to take care of their well-being (transit, water, heating/cooling, etc.) to maximize employee productivity. This suggests that employee work performance is impacted by personal stresses brought on by the needs of the natural world (DuBois & Dubois, 2012; Koster, Vos, & Schroeder, 2017).

Therefore, the subsequent study hypothesis is anticipated.

Hypothesis 8

H_{8a}: EGB acts as a mediator in the connection between GBPs and the sustainable performance of banks (Economic).
H_{8b}: EGB acts as a mediator in the interaction between banks' sustainable performance and GBPs (Social).
H_{8c}: The relationship between GBPs and the banks' sustainable performance is mediated by EGB (Environmental).

EGB as a Mediator Between Sustainable Bank Performance and Green HRM Practices

GHRMP is essential for business management for numerous reasons, such as enhancing a company's appeal, retaining employees, and benefiting the environment. Previous HRM studies concentrated on how certain practices, as opposed to a group of HRM activities, impacted the company's success. Renwick et al. (2013) suggested that the combined impact of GHRM policies on the environment and business performance would be much greater.

Thus, the influence of GHRMP on bundle performance is the primary focus of the current GHRM investigation. Siyambalapitiya, Zhang, and Liu (2018) suggested that increasing employee qualities like competence and motivation through green workplace practices could improve financial performance. Implementing green initiatives will advance manufacturing businesses' sustainability and serve as a reporting tool (Jabbour & Jabbour, 2016; Maícas et al., 2023).

Grosfeld et al. (2024) and Agrawal, Majumdar, Majumdar, Raut, and Narkhede (2022) assert that businesses use various organizational SP indicators, including company turnover for economic performance, water usage for environmental performance, and civic contributions for social performance. The reviews of current related literature do not address the aforementioned research questions. Consequently, the following theory is proposed.

Hypothesis 9

H_{9a}: The linking between banks' sustainable performance and GHRM practices is mediated by employee green behavior (Economic).
H_{9b}: The connection between sustainable performance and GHRMP is mediated by employee green behavior (Social).
H_{9c}: The connection between sustainable performance and GHRMP is mediated by EGB.

EGB as a Mediator Between CSR and Sustainable Performance

Organizations are emphasizing ending business practices that harm a nation's natural resources and endanger future generations to uphold green corporate social responsibility (Le, Tran, Lam, Tra, & Uyen, 2024). Green CSR (GCSR) can help banks reduce operating expenses and business risks. Many businesses worldwide focus on developing green products to support GCSR and sustainability (Jamshaid, Khan, Ali, & Kishwer, 2025). A strong reputation for green corporate social responsibility reduces organizational business risk and saves money. As a result, green corporate social responsibility activities are now required rather than discretionary. Even when laws have encouraged sustainability, GCSR has increased business success (Jamshaid et al., 2025).

Green business sustainability performance refers to the environmental, social, and economic aspects of corporate governance, particularly in the context of comprehensive and sustainable management practices (Naciti, Cesaroni, & Pulejo, 2022). A company's sustainability plan is a strategic framework that aims to achieve social equilibrium, sustainable development, and long-term economic viability for the business and its various stakeholders (Delgado-Ceballos, Ortiz-De-Mandojana, Antolín-López, & Montiel, 2023). Rehman et al. (2021) relied on the existing socially responsible investment to undertake a study investigating the relationship between GBP activities and their influence on banks' sustainability and corporate social responsibility. The study's conclusions show that everyday operating procedures, policy-related practices, and green investments in Pakistan's green banks are strongly positively correlated. As a result, we put forth the following hypothesis:

Hypothesis 10

H_{10a}: The relationship between CSR activities and sustainable performance is mediated by EGB (economic).
H_{10b}: The connection between corporate social responsibilities and sustainable performance (Social) is mediated by EGB.
H_{10c}: The connection between corporate social responsibilities and sustainable performance (environmental) is mediated by EGB.

Fintech's Moderating Influence on the Relationship Between GBP Practices and the Banks' Sustainable Performance Via EGB Mediation

FinTech adoption has a big influence on businesses' sustainable performance since it lowers carbon emissions and physical labor while encouraging the use of renewable energy sources and increasing resource efficiency. Additionally, by offering environmentally friendly financial services and goods, FA can improve EP (Gallo, Sosa, & Velez-Calle, 2023; Liu, Jiang, Gan, He, & Zhang, 2022).

Therefore, argue that to improve an organization's EP, FinTech adoption should be connected to its eco-friendly management procedures. A study shows that there are still few studies on the effects of FA on BEP because earlier research mostly concentrated on the effects of FA on banks' FP and accomplishments that are not monetary (Lamey, Tawfik, Durrah, & Elmaasrawy, 2024). In their investigation, Zheng, Akter, Siddik, and Masukujjaman (2021) examined the effects of FinTech adoption and GF on BEP in Bangladesh, considering green innovation as a mediating factor. The study found that both FA and GF significantly and positively influence BEP, with green innovation substantially mediating the relationship between FA, GF, and BEP. These theories suggest that no prior research has explored the connection between FA and BEP in developing emerging markets. To confirm that FA can support BEP as a method for environmental modernization, this study employs EMT (Bai, Cordeiro, & Sarkis, 2020). The following explains how the hypothesis is developed.

Hypothesis 11

H_{11a}: The adoption of fintech uses EGB as a mediator to control the connection between GBP and banks' SP (economic).

H_{11b}: Fintech adoption moderates the connection between GBP and banks' SP by utilizing EGB as a mediator (Social).

H_{11c}: Fintech adoption moderates the connection between GBP and banks' SP by utilizing EGB as a mediator (Environmental).

THEORETICAL FRAMEWORK

The integrated theoretical framework of this study combines the Resource-Based View, Social Exchange Theory, Ability-Ability-Motivation-Opportunity Theory, Stakeholder Theory, and Institutional Theory to explain how green-oriented strategies boost banks' sustainable performance through EGB.

The Resource-Based View Barney, Wright, and Ketchen (2001), suggests that sustainable competitive advantage derives from valued, rare, inimitable, and non-replaceable resources. As service contributions are easily replicable, intangible green resources such as GB practices, green finance competencies, CSR activities, GHRM practices, and green leadership are strategic assets in the banking sector. These resources enhance sustainable performance by boosting risk management, reputational capital, and environmental competency. Employee green behavior is a micro-level, intangible capability that supports the effective use of these resources, validating the model's mediating role.

The SET (Social Exchange Theory), Wallenburg and Handfield (2022) elucidates the behavioral mechanism linking businesses' sustainable practices to employees' outcomes. Employees view financial investments in CSR plans, adherence to GHRM practices, and mature leadership as examples of corporate participation and fairness. In response, workers voluntarily agree to environmental compliance, ecological services, and resource preservation. So, Social Exchange Theory explains how an organization's eco-friendly norms contribute to employees' green behavior, which may result in durable performance.

The AMO (Ability-Motivation-Opportunity) theory, Appelbaum, Gandell, Shapiro, Belisle, and Hoeven (2000) suggests a stance on human capital regarding how GHRM practices support employee green behavior in the context of SET. Environmental compensation and appraisal systems encourage environmental responsibility, green training enhances employees' environmental skills, and participation in decision-making creates opportunities to be involved in enduring projects. GHRM practices continuously accelerate employee green behavior through several channels, strengthening its role as a mediator between environmental practices and performance outcomes.

The ST (Stakeholder theory) Freeman, Harrison, Wicks, Parmar, and De Colle (2010) support the integration of CSR activities, ecological banking practices, and green banking practices of the model. Financial institutions are part of multifaceted stakeholder systems, including investors, clients, regulators, and the public, who increasingly demand environmental responsibility. By incorporating durability into their primary operations and financial products, banks reinforce stakeholder trust, legitimacy, and long-term value, which helps improve their lasting performance.

Institutional theory; DiMaggio and Powell (1983) clarify the broader contextual elements supporting the banking sector's adoption of ecological practices. Financial institutions face coercive and imitative pressures to adopt green finance, CSR, and environmentally responsible operations due to regulations, global sustainability standards, and regulatory prospects. These pressures, through human resource management systems and leadership, foster the institutionalization of ecological projects.

The integration of these theories provides a credible explanation for countless levels of long-lasting success in banks. While the theory of resources based on competencies emphasizes the strategic value of environmental resources, the theory of social exchange and AMO justify behavioral mechanisms at the employee level. On the other hand, external legitimacy and adoption pressures are explained by the theory of Stakeholders and Institutional theory. The hypothetical relationships are supported by this framework, which also positions the environmental compensation of employees as a vital channel through which good organizational practices are translated into sustainable financial performance.

The theoretical model was developed based on theoretical foundations and an analysis of current research on green banking, EGB, CSR activities, GHRMP, FinTech, and the sustainable performance of banks. The projected theoretical basis for the study is exposed in the graphic Figure 1.

Research Model:

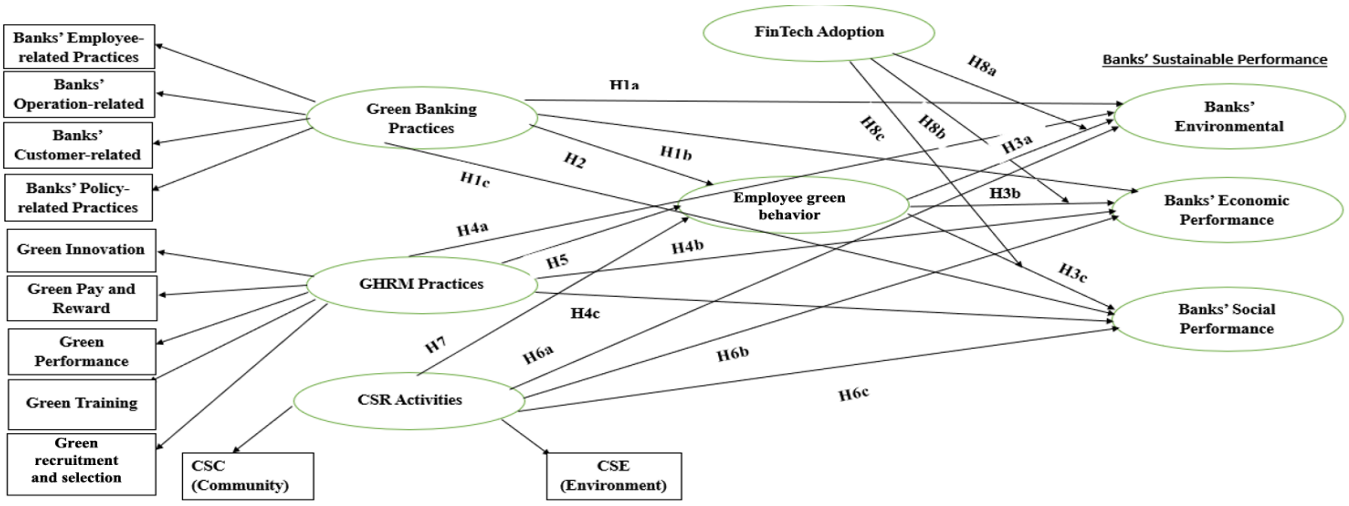

Figure 1: The model

MATERIALS AND TECHNIQUES

Design of the Research

This study employs a causal, mediation-based model analyzed using partial least squares structural equation modelling (PLS-SEM). PLS-SEM was developed due to the study's predictive focus, theoretical expansion, and model complexity, which combines many exogenous constructs with a mediating mechanism. The model investigates the effects of green banking practices, corporate social responsibility, green HRM practices, and FinTech adoption on bank efficiency, with green employee behavior acting as a mediating factor. The approach captures both organizational-level green strategies and employee responses, forming a comprehensive assessment of sustainability-driven value creation in the banking sector. According to previous research on sustainability in banking, most constructs are operationalized as reflective measurement models. Constructs reflecting aggregated practices may be classified as formative, leading to a mixed (reflective–formative) PLS-SEM model.

The empirical model equations for the direct, mediation, and moderation models tested are as follows:

The direct effects model equation is given below.

SP=β1GBP+β2CSR+β3GHRM+ε1
The mediation model equations are as follows:
Effects of green practices on employee green behavior: EGB=γ1GBP+γ2CSR+γ3GHRM+ε2
Mediator to outcome relationship: SP=β4EGB+ε3
Full mediation model: SP=β1′GBP+β2′CSR+β3′GHRM+β4EGB+ε4
Indirect effects are as follows:
GBP→EGB→SP=γ1×β4; CSR→EGB→SP=γ2×β4; and GHRM→EGB→SP=γ3×β4
Moderating effect on the mediator outcome relationship:
SP=β4EGB+β5FA+β6(EGB×FA) +ε5
Where ε = Error term and β, γ = Structural path coefficients

Data and the Sample

The research's target population consisted of bank managers nationwide. Branches of the nation's banks completed the survey within the allotted time because the study's participants were administrators. Based on Andersen (1990), as a criterion for unconstrained population sampling, the research employed a stratified sampling strategy to ensure a representative sample. The sample size was determined by selecting 620 branch managers based on the criteria set by Krejci and Morgan (1970) for determining the minimum sample size.

A harmonized questionnaire, developed to meet the unique requirements of the banking industry, served as the core instrument for data gathering. This questionnaire was methodically created to gather thorough information relevant to the areas of the study. The researcher gave the managers the alternative choices to complete the questionnaires manually (using a paper instrument) or electronically (using Google Forms) to expedite the data collection process. After gaining their permission, the respondents were given the questionnaires. The data gathering method required more than three months to deliver a timely and substantial response rate. The exercise was over on October 30, 2025, having been on track on August 1, 2025. Most of the task was completed in the time given to the respondents. The task was over with the help of qualified field assistants. The assistants could assist with the answers if needed because they had complete control over each question. Following the collection of sufficient participant data, the data underwent a thorough analysis to remove or drastically reduce any inaccuracies caused by missing or incorrectly completed questionnaires. After that, the data was meticulously coded to eliminate any instances of missing data. The SPSS (Statistical Package for Social Sciences) and Smart PLS-SEM techniques were used to code, process, and analyze the data. Informed permission and other ethical considerations were addressed before distributing the surveys. All confidentiality and plagiarism policies were adhered to, and the researcher collected the data alone. Following the study's conclusion, participant data were securely stored on Google Drive and deleted. The surveys were distributed to the general public and media solely for research purposes, with no identifying information included. The measurement of the constructs was based on earlier research (Table 1).

Measures of Constructs

All constructs were evaluated to ensure content validity, using validated multi-item measures modified from earlier research.

Table 1: Study variable measurements

Variables	No. of items	Measurement source
Green Banking Practices	12	Chen et al. (2022)
CSR Activities	7	De Roeck and Farooq (2018)
Employee Green Behavior	6	Chen et al. (2022)
Sustainable performance	12	Malik et al. (2021)
FinTech Adoption	4	Yuan (2025)
Green Human Resource Management Practices (GHRM)	19	Tang et al. (2018)

FINDINGS AND INTERPRETATION

The use of structural equation modeling, which incorporates higher-order components, is a helpful method for estimating complex models. A measurement model evaluation must be performed first to ensure accurate interpretation. As indicated in Table 2, this involves assessing both convergent reliability and model validity. Components with loadings greater than 0.7 are retained when using factor loadings to quantify dependability. A construct's conceptual domain can be represented by an object, as shown by these loadings. Loadings above 0.7, as recommended by Cheah, Sarstedt, Ringle, Ramayah, and Ting (2018). It demonstrates high internal consistency, ensuring that test items consistently evaluate the same concept.

Table 2: Evaluation of measurement constructs for convergent validity and reliability

Variables	Indicators	Factor Loading	rho_A	Composite reliability (rho-C)	AVE	Cronbach's Alpha
Green Banking Practices	BCRP1	0.803	0.949	0.955	0.639	0.949
	BCRP2	0.767				
	BCRP3	0.820				
	BERP1	0.801				
	BERP2	0.794				
	BERP3	0.801				
	BORP1	0.780				
	BORP2	0.805				
	BORP3	0.831				
	BPRP1	0.824				
	BPRP2	0.778				
	BPRP3	0.784				
Corporate Social Responsibility	CSC1	0.854	0.888	0.911	0.595	0.886
	CSC2	0.887				
	CSC3	0.748				
	CSE1	0.751				
	CSE2	0.828				
	CSE3	0.842				
	CSE4	0.855				
Employee Green Behavior	EGB1	0.855	0.922	0.941	0.762	0.922
	EGB2	0.872				
	EGB3	0.900				
	EGB4	0.879				
	EGB5	0.858				
GHRM Practices	GRS1	0.789	0.956	0.959	0.550	0.954
	GRS2	0.773				
	GRS3	0.788				
	GTR1	0.736				
	GTR2	0.774				
	GTR3	0.746				
	GPM1	0.715				
	GPM2	0.733				
	GPM3	0.766				
	GPM4	0.731				
	GPR1	0.787				
	GPR2	0.764				
	GPR3	0.776				
	GIN1	0.700				
	GIN2	0.743				
	GIN3	0.700				
	GIN4	0.700				
	GIN5	0.716				

Variables	Indicators	Factor Loading	rho_A	Composite reliability (rho-C)	AVE	Cronbach's Alpha
	GIN6	0.700				
Sustainable	BEP1	0.825	0.806	0.867	0.621	0.795
Performance	BEP2	0.851				
	BEP3	0.764				
	BEP4	0.703				
	BEC1	0.806	0.752	0.858	0.669	0.753
	BEC2	0.821				
	BEC3	0.826				
	SOP1	0.839	0.864	0.901	0.647	0.863
	SOP2	0.789				
	SOP3	0.800				
	SOP4	0.806				
	SOP5	0.785				
FinTech	FA1	0.788	0.865	0.905	0.705	0.860
Adoption	FA2	0.838				
	FA3	0.882				
	FA4	0.849				

Composite reliability (CR) and rho-A are the two diagnostic techniques used in this study to assess the reliability of internal consistency. The shared variance among the observable variables and the latent construct indicators is measured by the composite reliability, which is regarded as a trustworthy indicator in PLS-SEM (Fornell & Larcker, 1981; Sarstedt, Hair, Ringle, Thiele, & Gudergan, 2016). A CR of 0.60 to 0.70 may be used for exploratory research, but a composite reliability greater than 0.708 is required to pass the test. The AVE value in all cases is more than 0.500. The Cronbach's alpha value exceeds 0.700 in every case.

Convergent and Discriminant Validity Tests

Although it was customary to eliminate reflected indicators with loadings less than 0.700 from the measurement model, some authors of flexible criteria occasionally support factor loadings greater than 0.6. The indicator reliability test was conducted alongside tests of discriminant and convergent validity. The variance explained and the outer loadings of the indicators were also calculated. No inferences can be drawn until the latent variable accounts for at least 50% of the variance of each indicator. An external loading greater than 0.5 squared, or 0.708, was predicted. According to the theory of convergent validity, measurements of the same construct have a higher chance of correlating with the same construct.

Table 3: Discriminant validity using heterotrait-monotrait ratios

Construct	BEC	BEP	CSR	EGB	FA	GBP	GHRM	SOP	FA x EGB	FA x GHRM
BEC										
BEP	0.975									
CSR	0.788	0.803								
EGB	0.751	0.812	0.710							
FA	0.499	0.551	0.517	0.556						
GBP	0.775	0.824	0.865	0.718	0.493					
GHRM	0.806	0.849	0.770	0.819	0.590	0.791				
SOP	0.876	0.888	0.815	0.843	0.718	0.795	0.938			
FA x EGB	0.262	0.290	0.556	0.400	0.372	0.239	0.360	0.365		
FA x GHRM	0.275	0.326	0.590	0.361	0.395	0.295	0.399	0.379	0.863	

The HTMT and cross-loadings were used to assess an indicator's discriminative validity (Table 3). Discriminant validity is nil if the HTMT's end value is close to one, which is seen as more reliable. Henseler, Ringle, and Sarstedt (2015) endorse a threshold value of 0.90. However, a lower, more conservative threshold value of 0.85 is advised for conceptually more complex concepts (Henseler et al., 2015). Consequently, when the HTMT ratio is less than 0.85, indicators are quite good at differentiating between builds. As Table 3 illustrates, all HTMT values are below 0.9 except two values, which are 0.975 and 0.938, and most of them satisfy the more stringent cutoff of 0.85. The HTMT demonstrates that indicators significantly outperform the unrelated constructs in terms of loading on and discriminating on the parent constructs.

Collinearity Diagnostics

Additional evaluations of the route model's analytical power and the overall impact of the exogenous components.

Table 4: Variance inflation factors for evaluating multicollinearity

Constructs	VIF
GBP → Sustainable Performance (BEP, BEC, SOP)	(3.439, 3.431, 3.439)
GBP → EGB	3.377
EGB → Sustainable Performance (BEP, BEC, SOP)	(2.762, 2.674, 2.762)
CSR → Sustainable Performance (BEP, BEC, SOP)	(3.048, 3.035, 3.048)
CSR → EGB	2.976
GHRM → Sustainable Performance (BEP, BEC, SOP)	(3.561, 3.601, 3.561)
GHRM → EGB	2.501
FA x EGB→ Sustainable Performance (BEP, BEC, SOP)	(1.239, 1.231, 1.239)

The collinearity assessment revealed that most predictor–construct relationships had VIF values well below the recommended thresholds, indicating no major multicollinearity concerns. As Hair, Hollingsworth, Randolph, and Chong (2017) note, values slightly exceeding this threshold are not uncommon in complex structural models and do not necessarily threaten the stability of path estimates, especially when they remain far below the more conservative cut-off of 10.

The Structural Model

As the structural model image illustrates, GBP, CSR activities, EGB, GHRM practices, and SP are all related. EGB and sustainable performance are positively affected by GBP, CSR, and GHRM practices, according to the results. Figure 2 shows a representation of the structure.

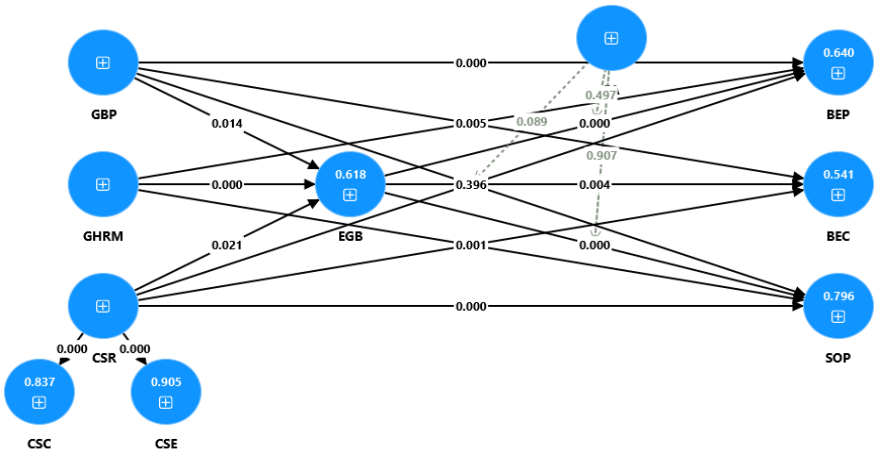

Figure 2. Structural Model

Moderation Testing

The moderator establishes the conditions essential for a forecast and an outcome variable to be related. This implies that a moderating variable influences the kind and degree of correlation between an outcome variable and a predictor. Moderators may be continuous and/or discrete (e.g., income or degree of reward) or qualitative and categorical (e.g., based on sex, race, or class). Moderators can alter a prediction's influence on a result, either positively or negatively. The research's ultimate objective was to study how FinTech adoption might mitigate the correlation between GBP and banks' sustainable performance. A bootstrapping technique was used to evaluate the importance of the moderating hypotheses; Table 5 displays the findings.

Mediation Test

Hair et al. (2017) assert that a third variable, referred to as the mediating variable, is inserted between two connected constructs in a mediation analysis. By establishing a link between the IV and the DV, this mediating variable validates them. The outcomes of several direct and indirect effects are displayed in Table 5.

Table 5: Direct and indirect impacts on sustainable performance and their path coefficients

Relationship	Path coefficient	SE	T statistic	P-values
Green banking practices → Sustainable performance (β1)	GBP→BEP 0.254	0.063	4.033	0.000
	GBP→BEC 0.171	0.060	2.840	0.005
	GBP→SOP 0.044	0.051	0.849	0.396
Green banking practices → Employee green behavior (β2)	0.140	0.057	2.446	0.014
Employee green behavior → Sustainable performance (β3)	EGB→BEP 0.217	0.053	4.124	0.000
	EGB→BEC 0.157	0.054	2.910	0.004
	EGB→SOP 0.150	0.036	4.169	0.000
GHRM Practices → Sustainable performance (β4)	HRM→BEP 0.298	0.049	6.041	0.000
	HRM→BEC 0.312	0.058	5.353	0.000
	HRM→SOP 0.509	0.042	12.096	0.000
GHRM Practices → Employee green behavior (β5)	0.577	0.048	12.075	0.000
CSR activities → Sustainable performance (β6)	CSR→BEP 0.108	0.054	2.003	0.045
	CSR→BEC 0.190	0.056	3.422	0.001
	CSR→SOP 0.136	0.037	3.624	0.000
CSR activities → Employee green behavior (β7)	0.123	0.053	2.307	0.021
Green banking practices → Employee green behavior → Sustainable performance (β8) (GBP→EGB→BSP)	BEP 0.031	0.014	2.135	0.033
	BEC 0.022	0.012	1.893	0.058
	SOP 0.021	0.009	2.285	0.022
	BEP 0.125	0.033	3.818	0.000

Relationship	Path	coefficient	SE	T statistic	P-values
GHRM Practices → Employee green behavior → Sustainable performance (β9) (GHRMP→EGB→BSP)	BEC	0.090	0.033	2.766	0.006
	SOP	0.087	0.023	3.795	0.000
	BEP	0.027	0.013	2.023	0.043
CSR activities → Employee green behavior → Sustainable performance (β10) (CSR→EGB→BSP)	BEC	0.019	0.011	1.817	0.069
	SOP	0.018	0.010	1.942	0.052
	BEP	0.015	0.023	0.679	0.497
Fintech Adoption × Green banking practices → Employee green behavior → Sustainable performance (β11) (FA×GBP→EGB→BSP)	BEC	0.031	0.018	1.702	0.089
	SOP	0.002	0.017	0.116	0.907

RESULTS OF HYPOTHESIS TESTING (PARTICULAR INDIRECT EFFECTS AND DIRECT EFFECTS)

Direct and indirect effects of the relationships are explained as follows:

A- Direct Effects

- Green Banking Practices (GBP → SP)

Significantly beneficial impact on BEC (β=0.171, p=0.005) and BEP (β=0.254, p=0.000), but not significant for SOP (β=0.044, p=0.396). This suggests that while environmentally conscious banking practices by banks increase productivity and competitiveness, they may not always result in more significant societal benefits. This aligns with institutional theory, which holds that financial institutions use green practices to increase their efficiency and legitimacy. Elsewhere, operational greening, however, social performance demands more thorough stakeholder participation.

- Green Banking Practices (GBP → EGB, β=0.140, p=0.014)

According to the RBV, which interprets internal practices as intangible assets that support innovative financial instruments, it demonstrates a significant positive effect, demonstrating that green banking enhances EGB.

- Employee Green Behavior (EGB → SP)

Strong positive impacts across BEP (β=0.217), BEC (β=0.157), SOP (β=0.150); all highly significant. This endorses that employee green behavior directly influences all three dimensions of sustainable performance. Importantly, the biggest connection is with BEP, signifying how employee green behavior specifically reinforces banks' competitiveness.

- GHRM Practices (GHRM → SP)

Impact is significant in all three dimensions, but strongest for SOP (β=0.509, p=0.000). This suggests that executives' environmental vision plays a crucial role in determining banks' social legitimacy, in addition to improving operational and financial results.

- GHRM Practices → EGB (β=0.577, p=0.000)

The effective application of GHRM practices results in ecologically friendly behavior of employees at work.

- CSR activities (CSR → SP)

It shows that applying CSR activities increases the competitiveness and sustainable performance of the banks.

- CSR → EGB (β=0.123, p=0.021)

The adoption of CSR activities enhances the employees' green behavior at work.
B- Indirect Effects (Mediation through Employee Green Behavior)

- GBP → EGB → SP

Significant indirect effects were observed in BEP and SOP. BEC shows an insignificant effect: GBP directly and indirectly supports SP through employees' green behavior, except for BEC.

- GHRM → EGB → SP

All SP dimensions showed significant mediation (p less than 0.05). It implies that GHRM practices enhance sustainable performance.

- CSR→ EGB → SP

It shows strong mediation in the case of the BEP dimension and weak mediation in cases of BEC and SOP.
C- Moderation (FinTech Adoption × GBP → GF → SP)
The findings provide limited empirical evidence for the moderating effect of FinTech adoption on the indirect relationship between sustainable performance through green employee behavior and green banking practices. Specifically, there is no statistically significant indirect impact of the interaction term (FinTech Adoption × Green Banking Practices) on bank social performance (β = 0.002, p = 0.907) or environmental performance (β = 0.015, p = 0.497). These results indicate that FinTech introduction does not significantly enhance the conversion of green banking processes into green employee behavior, which ultimately affects these sustainability dimensions.

Bank's economic performance shows a marginally significant influence (β = 0.031, p = 0.089), indicating that FinTech adoption may have a conditional and selective role in enhancing economically oriented sustainability results. This implies that FinTech-enabled solutions, such as digital process automation, data analytics, and cost-effective service delivery, may improve the effectiveness and financial earnings of green programs without necessarily strengthening employees' inherent green behaviors.

FinTech adoption may remain technology-centric rather than sustainability-centric, especially in emerging financial markets, which could limit its ability to influence employees' pro-environmental behavior. The moderating effect of FinTech techniques on employee green behavior may be diminished if employees perceive them as efficiency or compliance measures rather than tools for promoting eco-friendly responsibility.

In general, the outcomes reveal that the relationship between employee behavior, green banking, and sustainable performance is not consistently reinforced by FinTech implementation. Its poor and outcome-specific moderating function highlights the fact that digital transformation is not enough to improve behavioral paths toward sustainability on its own. To convert technical improvements efficiently into long-term employee-driven eco-friendly outcomes, banks targeting comprehensive sustainable performance require supplementing FinTech investments with leadership support, green-oriented training, and cultural interventions.

DISCUSSION

The outcomes reveal how CSR activities, green banking practices, and GHRM all boost banks' sustainable performance. The results demonstrate that, whereas green banking practices significantly improve operational and financial performance, their impact on social performance is entirely mediated by employee green behavior. This finalizes that, although ecological operations boost productivity and competitiveness, social legitimacy requires converting those practices into financial goods and services that further enhance social objectives.

Yet, GHRM turns out to be an active facilitator of employee green behavior. In addition to strongly predicting employee green behavior, GHRM directly enhances operational and social outcomes by encouraging sustainability-oriented employee abilities and behaviors. This supports the claim that human capital is the cornerstone of energetic sustainability capabilities. Meanwhile, banks that implement sustainability-oriented HR activities support the development of decent, green jobs and encourage ecologically conscious economic activity, which endorses SDG 8. According to previous research, banks are essential for maintaining a balance between social and environmental concerns and economic growth (Liu et al., 2022).

The mediating function of EGB, which endorses SDG 9, authenticates its capacity to allocate resources toward ecologically responsible projects. This supports prior studies that expose green practices as vital for supporting systemic sustainability transitions in emerging nations (Zhang, Li, Xue, Wang, & Cao, 2021).

FinTech's moderating role reveals its revolutionary potential for increasing sustainable financing and improving green banking practices. FinTech-enabled solutions like blockchain, artificial intelligence, and mobile banking enhance transparency, reduce transaction costs, and promote environmentally friendly financial flows, aligning with SDG 13. Financial institutions that incorporate digital technologies into their sustainability policies not only improve performance but also accelerate the climate transition (Iatzaz Ul Hassan et al., 2025).

Altogether, by incorporating FinTech, CSR, green HRM, and finance into banking operations, a comprehensive sustainability plan is achieved; our outcomes support both theory and practice. By proceeding with numerous SDGs at once, this agenda provides a means for the banking industry to operationalize its contribution to the UN 2030 Program.

PRACTICAL AND THEORETICAL IMPLICATIONS

Academic theory and managerial practice benefit equally from this research. By examining how RBV, dynamic capability frameworks, and institutional pressures meet to explain sustainable banking, it theoretically authenticates multi-lens approaches. It provides legislators and financial experts with supportive information by emphasizing the vital role that FinTech and green finance play in achieving sustainable development goals.

Theoretical Implications

This study supports the theory in numerous ways. First of all, it excels in institutional theory by demonstrating that banks adopt CSR and GBP not only for legitimacy but also because these practices promote lasting outcomes, especially when mediated through employee green behavior. Second, by recognizing employee green behavior as a strategic resource that significantly enhances competitiveness, it supports the RBV by linking intangible eco-friendly practices with measurable performance outcomes. Third, it authenticates the dynamic capability concept by indicating that GHRM provides banks with the absorptive capacity to apply employee green behavior for improved sustainability results. Lastly, by showing that FinTech amplifies the effect of GBP on competitiveness, the outcomes validate contingency theory and suggest that technological settings influence the effectiveness of sustainability measures. When considered collectively, these contributions demonstrate that the most effective approach for clarifying banking sustainability is a multi-theoretical method that integrates institutional, resource-based, and contextual perspectives. This aligns with SDG 9, as it offers a theoretical foundation for understanding how management and financial innovation enable sustainable industrialization.

Policy/Practical Implications

For policymakers and regulators, the outcomes support the need for sustainability regulations that are based on technology. Principles emphasizing the adoption of FinTech as a feasible option for developing banks may negatively influence behavior and durability. Instead, policymakers should develop integrated green finance strategies that encourage both digital advancement and changes in employee behavior.

Regulators can first safeguard that banks use FinTech implementation to develop sustainable practices, such as through regular sustainability training, reporting guidelines that govern business engagement in conjunction with technological implementation, and making green initiatives public at the employee level. Therefore, it would be better for assistance instruments to focus on sustainability measures that are based on consequences, so that FinTech investments directly contribute to ecological and social achievements rather than just improving operational efficiency.

In general, this research discloses that human behavior is just as vital as technology for the stable performance of the bank. While green banking processes and EGB emerge as robust and reliable instruments for sustainability, FinTech adoption is limited and conditional. The results highlight the importance of

implementing a strategy that takes sustainability into account in an equitable manner. In this instance, digitalization should be strategically integrated with cultural, behavioral, and political interventions. By outlining the advantages and disadvantages of FinTech in green banking, this study provides banks and legislators with practical advice on how to attain significant and enduring sustainable performance.

Management needs to invest in green human resource management systems since employee green skills and values are strongly predictive of employee green behavior. Policymakers and regulators should develop outlines and incentives that encourage green behavior among employees, given their direct and significant role in fostering legitimacy and competition to support SDG 8 (Economic Growth and Decent Work) by establishing credibility, trust, and reputation, particularly in enhancing social performance.

FinTech declares that to scale sustainable finance, innovation driven by technology is crucial. This shows that by introducing digital transparency, efficient green fund allocation, and green credit assessment, banks can more effectively fulfil SDG 13 (Climate Action).

Limitations And Further Scope

This study has certain limitations, despite offering fresh perspectives. First, the outcomes might not be as applicable to developed nations with different regulatory, technological, and cultural frameworks because the research was limited to one emerging economy (Pakistan). Second, future researchers should use longitudinal designs to capture the dynamic evolution of GBP, CSR, GHRM, and EGB over time, as the cross-sectional approach restricts the capacity to establish causality. Third, in favor of concentrating primarily on GBP, CSR, and GHRM, the study overlooked other relevant elements that could impact sustainability outcomes, such as green financing, organizational support systems, and green leadership.

Fourthly, FinTech was examined as a moderator for the GBP–EGB–SP interaction; future research should investigate how it affects the relationships between leadership, HRM practices, and sustainability. Lastly, qualitative or mixed methods may provide a deeper, more thoughtful understanding of the challenges banks face when implementing green policies, even if this study used quantitative methods. Future studies should compare developed and emerging economies, replicate this model in different institutional and geographical settings, and consider additional elements such as ESG reporting, cultural norms, and regulatory pressures. These developments will offer a more comprehensive picture of the financial zones' progress toward sustainability and enhance our understanding of how institutions attain sustainable performance.

CONCLUSION

This study explored the influences of GHRM, CSR, and green banking practices on banks' sustainable performance, with FinTech adoption as a moderating factor and EGB as a mediating mechanism. Green banking approaches enhance economic and operational performance, but only EGB can comprehend their social impact. CSR was found to be the most influential direct driver of social performance, highlighting its influence on corporate culture and legitimacy.

The implementation of employee green behavior was more effectively facilitated by GHRM, which not only upgraded operational and social outcomes but also confirmed the critical role that human capital plays in developing sustainability capabilities. Particularly, by significantly enhancing all facets of sustainable performance, especially competitiveness, which closely aligns with SDG 9, employee green behavior confirmed its crucial position in sustainable banking systems. The advantages of GHRM, GBP, and CSR also show how banks may promote responsible business practices, establish sustainable work environments, and support SDG 8.

The adoption of FinTech further demonstrated the contextual value of technical invention by stimulating the relationship between GBP and competitiveness through EGB, as stated by the moderation study. The study provides thorough knowledge of how banks could achieve sustainable performance by integrating contingency theory, dynamic capacity theory, resource-based approach, and institutional theory. FinTech's moderating role emphasizes the value of digital innovation in expanding sustainable banking practices, which directly supports SDG 13 (Climate Action).

The outcomes endorse complex ideas that move beyond optimistic norms about tech-focused sustainability by contrasting the nonconfirmed and confirmed hypotheses. The conclusions support the dominant behavioral approach of the research model. GBP, GHRMP, and CSR activities significantly enrich EGB, which subsequently has a positive influence on all dimensions of sustainable performance in banks. This validates the study's primary foundation that EGB is a dynamic transmission mechanism through which organizational green arrangements produce concrete sustainability outcomes. These results strongly support SET, indicating that employees counter organizational commitment to environmental responsibility with pro-environmental actions that enhance sustainable performance.

In contrast, the outcomes do not validate the assumed moderating role of FinTech in the GBP-EGB-BSP relationship. Except for an insignificant impact on economic performance, the adoption of FinTech does not significantly improve the indirect connection between social and environmental performance results. This non-confirmation weakens the widely held notion that digitalization certainly advances sustainability outcomes, which is significant both practically and theoretically. As an alternative, the results show that FinTech adoption, in its current form, operates primarily as an efficiency-oriented technological resource rather than a behavior-shaping sustainability enabler.

This study concludes that financial institutions can catalyze systemic transformation. Banks can go beyond compliance and profitability to actively contribute to the UN 2030 Plan for Sustainable Development by adopting sustainability-oriented practices and coordinating strategies with the Sustainable Development Goals.

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INSTITUTIONAL REVIEW BOARD STATEMENT: This study was approved by the Institutional Review Board of the University of Sialkot, Pakistan, under protocol number: USKT/EIRB/17-2025 dated December 29, 2025. Informed verbal consent was obtained from all participants, and all data were anonymized to protect participant confidentiality.
TRANSPARENCY: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
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AUTHORS' CONTRIBUTIONS: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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