

Green HRM and Green Image: The Serial Mediating Role Between Green Banking Practices and Sustainable Performance

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Abstract

The Purpose of the paper is to assess the role of green banking practices on sustainable performance through the serial mediation of green human resources management and green image. The researchers with a positivist research philosophy employ a cross-sectional study design to collect data through questionnaires comprised of scales adapted from prior studies. With a usable sample size of 356 respondents, the study uses PLS-SEM for measurement and structural model assessment. Study reveals the significant role of green banking practices on sustainable performance and serial mediation role of green human resources management and green image in between green banking practices and sustainable performance found significant. The study contributes to the body of knowledge by demonstrating how green banking practices improve sustainable performance. Its novelty resides in exploring the serial mediation role of green human resources management and green image between green banking practices and sustainable performance. Policy-wise, the findings point to the developing supportive legislation and incentives that would ensure that the banks make green HRM practices and improve their green image, as this would lead to the long-term sustainability outcomes of the banking industry.

Keywords: Green banking practices, green human resources management, green image, sustainable performance. socially responsible investment theory.

1. Introduction

Due to environmental changes, a wide range of stakeholders such as investors, directors, researchers, industrialists and public are paying more attention towards sustainability.

Recent flooding, droughts, and severe temperature that several people throughout the world have been forced us to start thinking about to resolve the issues of air pollution, climate change, land loss, biodiversity loss, deforestation, environmental damage. Use of fossil fuels for heat, electricity, and transportation, industrial processes, and changes in land use are contributing factors to the global climate change. Practically every element of human development could be hampered by climate change. It endangers infrastructure, energy supply, water resources, ecosystems, and agricultural productivity. The latest report of intergovernmental panel on climate change (IPCC) provides new thresholds of crossing the global warming level of 1.5°C in the next decades and finds that unless there are quick reductions in greenhouse gas emissions, limiting warming to 1.5°C. (IPCC, 2007). There is a need to do everything that we can to address the problem of global warming. Therefore, to ensure sustainable and uniform development, the consciousness of sustainability issues should be invoked among academics, bankers, investors, administrations, legislators, advocacy groups, corporations, and communities

The world community is dealing with heat waves and floods, among other effects of climate change (Gulzar et al., 2024). According to Aslam and Jawaid (2023), environmental change is one of the most urgent problems facing developed and emerging nations worldwide. The detrimental consequences of recent droughts, swamping, and excessive temperatures that many people have experienced worldwide have forced everyone to start considering the repercussions of global warming (Gulzar et al, 2024). Increasing global warming, degrading environmental quality, and waste ending in landfills have become threats to the sustainability of ecosystems (Majeed and Luni, 2020). Therefore, the worldwide economy should consider alternative operating models that consider the economic, environmental, and social effects. This new model calls on the support of all sectors to manage the integration of sustainable development as part of economic growth (Nizam et al., 2019).

Green banking involves the social responsibility of preserving the environment, which is why it is also known as social or responsible banking. Previously primarily recognized in the manufacturing industry, banks are now recognized as one of the primary direct and indirect contributors to global climate change. Due to this, stakeholders now demand that green banking be implemented globally (Bukhari, 2023). "Green banking is a shift in the banking system's ideology, not just a strategy for the banking industry" (Bukhari et al., 2020).

World-leading developed economies, e.g., the United Kingdom, Belgium, Sweden, Australia, Japan, and the Netherlands, have adopted an industry-driven strategy that primarily focuses on revealing climate-related financial risks in order to help the task force on climate-related financial disclosures' agenda (Demers et al., 2024). A further example of a developed nation is Japan, where banks can obtain concessional loans from the Bank of Japan for energy and environmental companies. The UN General Assembly (UNGA)

also passed resolution No. 70/1 to Change the World: The Sustainable Development Agenda 2030. Affordable and green energy is the focus of SDG 07, While SDG 13 focuses on climate change. IFC has committed to reducing facility-related emissions by twenty percent between 2016 and 2026 (Citaristi et al. 2022). In emerging nations such as Bangladesh and India, A specific sum of money is allocated by central banks to environmentally concerned businesses.

Many emerging countries have received support from international development agencies such as the IFC to develop green banking policy frameworks (Citaristi et al. 2022). However, the emerging countries are at different stages of the development of sustainable finance: Brazil, Bangladesh, Nigeria, Indonesia, and Vietnam. Mongolia and Colombia are the most developed countries since they started to report on the outcomes of their efforts to adopt ESG. Because of its rapidly expanding population, haphazard adoption of modern technology, and inadequately managed waste management system, environmental problems have also affected Pakistan (Bukhari et al., 2020).

Climate changes also impact Pakistan. Pakistan's greenhouse gas emissions exceed most of those of its underdeveloped neighbors. (Abas et al., 2017). The country is lagging in GBP compared to the other Sustainable Banking Network member countries, especially its neighboring countries like Bangladesh and China. Before 2017, The banking sector in Pakistan did not embrace the idea of green banking. (Khan et al, 2024). In order to combat the numerous risks to the nation's natural environment and to realize the potential advantages, Pakistan must embrace green banking (Khan et al., 2024).

Green Banking is a banking concept that Pakistan currently needs to achieve environmental sustainability and economic prosperity. On October 9, 2017, the State Bank of Pakistan (SBP) issued voluntary Green Banking Guidelines (Rehman et al, 2021; Park & Kim, 2020). In 2022, the SBP developed the Environmental and Social Risk Management (ESRM) implementation manual to assist banks in identifying and managing social and environmental risks by implementing appropriate policies, procedures, and tools. This ESRM manual was issued following the adoption of the Green Banking Guidelines and is designed to provide the necessary resources and best practices to strengthen the application of those guidelines.

Recently, various studies on green banking have been carried out globally (Bose, Khan, Rashid, & Islam, 2018; HHDNP, & Arulrajah, 2014; Sharmeen et al., 2019;). Furthermore, the main focus of these studies was GBP and environmental performance (Gulzar et al., 2024). Direct and indirect effects of sustainable banking practices enhance the performance of banking institutions (Siddik et al., 2024); green banking literature review on profitability and sustainability implication. GBP bank reputation and environmental awareness (Aslam and Jawaid, 2023; Khan et al., 2024); green banking activities and its development (Bose et al, 2018; Khairunnessa et al., 2021); green banking adoption (Rehman et al., 2021); Green banking performance and environmental sustainability (Bose et al., 2018; Sharmeen et al., 2019). Additionally, some research evaluated the effects of GBP on Indian banks'

environmental performance (Kala and Vidyakala, 2020), Sri Lanka (HHDNP, & Arulrajah, 2014) and Bangladesh (Bose et al., 2018; Sharmeen et al., 2019).

Although the body of literature linking the green banking practices (GBP) with the improvement of sustainability performance and green image is growing (Siddik et al., 2024), the understanding of how such associations should work in the developing economies, particularly in Pakistan, seems to be lacking. The majority of the exiting studies were focused on the developed or upper-middle-income countries with a greater level of technological preparedness, regulatory implementation, and stakeholder engagement (Subedi and Bhattarai, 2024). The generalizability of the global results to such countries as Pakistan, which possesses a low institution structure, there implementation is disintegrated and awareness is quite limited. Therefore, localized studies are required to reflect the subtleties of the effectiveness of green banking under such contextual limitations.

Therefore, to the authors' knowledge, research studies based on primary data in the context of Pakistan have been few in the direction of green banking practices (GBP), sustainable performance (SP), green image (GI), and green HRM (GHRM). So, it is necessary to evaluate the indirect effect of GBP on SP via GHRM, GBP on SP through GI, GBP on the GI through GHRM, green human resources management on SP via GI, and finally, the indirect effect of GBP on SP via the serial mediation of green human resources management and green image. This study makes several significant additions to the body of literature, one of which is the indirect contribution of green banking practices on SP through serial mediation of green human resources management and green image. One of the study's novel findings is the significance of green banking practices' role on SP through serial mediation of green HRM and GI.

2. Literature Review

GBP describes financial institutions and banks using sustainable practices to protect the environment. Green banking practices, also known as sustainable banking or ethical banking, are banking practices that consider environmental and social impacts in their operations. They encompass various strategies, policies, investments, and initiatives to promote sustainability and social responsibility within the banking sector (Islam et al., 2024). Green investment and green policy are the major elements of green banking practices. In the banking industry, "green investment" refers to allocating funds to initiatives that lessen the effects of climate change, such as sustainable infrastructure, energy-efficient technologies, and renewable energy projects (Sullivan and Mackenzie, 2021). Numerous studies indicate that green investments can lower carbon emissions and yield long-term financial gains. Green policies about green banking include the tactics and rules that banks use to encourage environmental sustainability, Reduced paper use, energy-saving technology adoption, eco-friendly loan promotion, and stringent environmental screening for finance are a few examples of these policies. Policies to evaluate and reduce climate change risks, such as exposure to carbon-intensive sectors and natural disasters,

are being adopted by banks more frequently. Furthermore, environmental strategies strongly influence green innovation, as green vision and strategies are essential for incorporating green innovation (Malik et al., 2024).

The phrase "sustainable performance," which refers to economic, social, and environmental performance, is a recent development. Economic performance focuses on significantly improving revenue and market share, decreasing operational expenditure, improving resource management, creating more competitive advantages, contributing to government exchequer, and reducing the overall risk. In order to engage and benefit numerous stakeholders from the bank's adoption, an organization's social performance, especially in the banking sector, is very important. The growth of stakeholders, both internal and external, is referred to as social performance. According to Barclays (2016), a green bank acts morally and responsibly towards its staff and the community. Transparency, responsibility, and accountability towards GBP and stakeholders on the bank's natural environmental impacts and green initiatives constitute the social component of green banking. Environmental performance refers to how a business's activities affect the environment. (Zhang et al., 2022).

The term "environmental performance" describes measures taken to prevent adverse environmental effects, such as reducing the amount of paper used, conserving energy, funding environmentally friendly projects, using less gasoline, and reducing carbon emissions (Khairunnessa et al., 2021). In order to improve organizational performance, GHRM is a new trend in successful management—integrates and blends environmental management with SP. According to Bashir et al. (2020), a corporate green image is said to be developed by implementing a good attitude toward social and environmental issues, which helps to create an ecologically friendly image.

This study attempts to bridge the research gap in the following ways: First it identifies mediating effect of GI between GBP and SP. Second, the study will demonstrate the mediating impact of GI between GHRM and SP. Third the current study also analysis the mediating effect of GHRM between GBP and SP. Fourth, the study analyzes the mediating effect of GHEM between Green Banking Practices and GI. Fifth the study demonstrates the serial mediation impact of GI and GHRM between GBP and SP.

2.1 Theoretical Background and Hypotheses Development.

Promoting the use of money to achieve financial and social goals is the objective of the socially responsible investment theory (SRI). (Lee and Miller, 2012). Ethical, social, environmental, and green project investment are interchangeable terms, explained the SRI theory (Chatzitheodorou et al, 2019). According to Sturm and Field (2018), SRI is a type of social impact investment that can directly or indirectly significantly boost public assistance for investors and society. The environmental dimension explores financial benefits by adopting environmentally concerned investments, while sustainability involves businesses with financial, social, and environmental benefits (Bergek et al., 2013). As defined by the SRI theory, green banking is concerned with creating the environmental

policies and practices required to save the environment and guarantee a low-carbon economy (Zhang et al., 2022). Focusing on socially responsible investing to improve SP has benefited managers and policymakers alike, and the SRI theory serves as a guide to strengthen the relationship between green banking practices and green image, bank trust, and bank loyalty (Korzeb, and Samaniego 2019).

2.2 Green Banking Practices, Green Human Resources Management, and Sustainable Performance

Prior studies have reported mixed results when examining the association between green banking practices, GHRM, and SP; for example, Correia et al. (2024) highlighted that GHRM is necessary to improve sustainable performance, and results showed that GHRM practices positively affect sustainable performance. Another past study by Kramar (2014) stated that GHRM practices enhanced positive environmental outcomes. Renwick et al. (2013) suggested that GHRM practices positively contributed to environmental sustainability. The social element of GBP focuses on the bank's role in developing internal and external stakeholder relationships. GHRM depends on perceived institutional pressure and enhances the green image, shaped by distinct configurations, positively affecting firm performance (Zhang et al., 2024). The results of another research confirm that only customer-focused green practices enhance banks' environmental performance (Chowdhury et al., 2025) Based on the literature review, we hypothesized as follows: -

- H1: Green HRM mediates the relationship between green banking practices and sustainable performance.
- H2: Green HRM mediates the relationship between green banking practices and green image.

2.3 Green Banking Practices, Green Image and Sustainable Performance

According to Sharmeen et al (2019), GBP improves Islamic banks' profitability and responsibility in the eyes of traditional banks. According to Sharma and Choubey (2022), green bank marketing positively impacts the creation of a green corporate image. Similarly, Chen (2010) advocates that green images have a beneficial impact on sustainable performance. Adequate steps are required for GBP to improve economic, social, and environmental performance in order to improve banks' perceived greenness. (Falcone et al., 2018). Implementing GHRM practices enhanced corporate social performance in the banking sector of Pakistan (Amjad et al, 2021). Hence, this study hypothesized as follows:

- H3: Green banking practices and sustainable performance through green image have a significant indirect relationship.
- H4: Green HRM and sustainable performance through green image have a significant indirect relationship.

2.4 Green Banking Practices, Green Human Resource Management, Green Image and Sustainable Performance

A study in India revealed a noteworthy positive correlation between banks' environmental performance and profitability. Consequently, green banking policy significantly influences day-to-day operations and the funding or investment in green projects. Furthermore, GBP leads to improved operational efficiency, increased green investments, improved sustainable environmental performance, and improved profitability for the banking sector. GHRM improves employees' perceptions of organizational support for environmental performance. Moreover, a GI builds strong customer relationships and attracts potential customers, confirming sustainable growth (Chen and Chang, 2013). The outcomes of the other one demonstrate that although there is no apparent effect of green HRM on employee job satisfaction, it significantly improves the reputation of a company. Green training improves the work satisfaction of employees, as well as the image of the company and green awards significantly contribute to it. Furthermore, reputation of the company without influencing the job satisfaction of workers. In addition, Green HRM practices and business reputation have a positive relationship that organizational culture does not mediate (Faeni et al., 2025). As a progressive model, green banking achieves four goals: increase the sustainable performance of banks, create a social image for banks, reduce harmful effects on the environment, and generate future social benefits. Hence, it can be hypothesized as follows: -

- H5: Green HRM and green image serially mediate between green banking practices and sustainable performance.

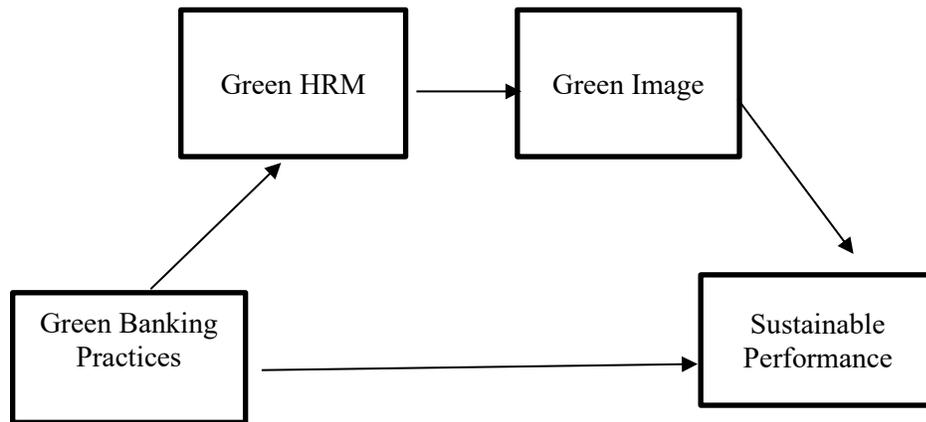


Figure 1: Conceptual Framework

3. Research Methodology

3.1 Study Population, Sample, and Data Collection

A total of 362 questionnaires were collected from the 1,000 questionnaires that were distributed. From these, only 356 questionnaires were complete and included in the study, and six were incomplete. We used a five-point Likert scale to assess the survey items, allowing respondents to indicate their level of agreement or disagreement. In the sample of 356 respondents, most were male, with 334 individuals (93.8%). The educational background shows that 236 respondents (66.3%) have undergraduate degrees, while 82 (22.10%) have completed postgraduate studies. The age breakdown shows that most respondents are between 31 to 40 years old (161 individuals, or 45.2%) and 41 to 50 years old (135 individuals, or 37.9%). This group likely has valuable perspectives from their experiences. Additionally, 195 respondents (58.9%) reported having more than six years of work experience, indicating a knowledgeable group. The respondents work at various banks, including National Bank of Pakistan, Habib Bank Ltd., Allied Bank Ltd., United Bank, and Meezan Bank, among others, which highlights the study's relevance in the banking sector.

3.2 Research Design

This study collected and analyzed data using a cross-sectional study design and a quantitative methodology based on positivist research philosophy. SmartPLS was then used to perform a PLS-SEM analysis on the collected data. Studies in which constructs are unobservable latent variables assessed by questionnaires are most suited for the PLS-SEM estimate approach (Ndassi Teutio et al., 2023). The study used the Partial Least Square Structural Equation Model (PLS-SEM) instead of the Covariance-based approach (CB-SEM) due to the largely exploratory and predictive nature of the model. The research aims at determining the variation in the sustainable performance outcomes through a complex sequential mediated process, which incorporates Green HRM and Green Image. It is this kind of complexity that requires an analytical approach that is effective in estimating multiple indirect effects simultaneously. PLS-SEM is very suitable to such models because it enables formative and model reflective constructs, is less demanding when it comes to data distribution issues, and offers stronger bootstrapping processes to measure the effects of mediation. PLS-SEM possesses several strengths compared to CB-SEM such as being able to evaluate complex models, formative and reflective constructs. The best in the research exploratory and casual-predictive, PLS SEM is better as it has a high statistical power compared to CB-SEM. Finally, PLS SEM is better than the regression analysis in managing the mediation effect (Hair et al., 2019). All these issues led to the decision of estimating the model with the help of PLS-SEM.

4. Data Analysis and Results

4.1 Measurement Model Estimation

There are two higher-order and five lower-order constructs in our measurement model. GBP, a higher construct, comprised two lower-order constructs, i.e., green investment and green policy. Furthermore, Environmental, economic, and social performance are the three lower-order constructs that comprise the second higher-order construct, i.e., sustainable performance. In order to assess the study's measurement model, we used the PLS algorithm to analyze factor loadings and eliminated 15 of 40 items whose factor loading was below the 0.40 level (Hair et al., 2019). Cronbach's alpha and composite reliability (ρ_c) values were utilized to evaluate the reliability of the scales, with both measures exceeding the 0.70 threshold (Hair et al., 2019). The Variance Inflationary Factor (VIF) was employed to detect potential multicollinearity in our measurement model. The results showed that all components had VIF values below the threshold of 5 (O'Brien, 2007), effectively ruling out any concerns regarding multicollinearity among the components (see Table 1).

We assessed the scale's convergence validity by calculating AVE (average variance extracted). For every construct in our measurement model, the result was higher than the 0.5 threshold value (Hair et al., 2019). Therefore, there is no evidence of a problem with the scale's convergent validity. Finally, cross-loading, the Heterotrait -Monotrait (HTMT) ratio, and the Fornell and Larker (1981) criteria are used to assess the discriminant validity of the scale. Each scale component's HTMT value stayed far below the 0.85 cutoff (Clark and Watson et al., 1995). (see Table 2). Similarly, the criteria variance within constructions stayed significantly higher than the shared variance with all other constructs, according to Fornell and Larker (1981). Therefore, the scale's discriminant validity is proven.

Table 1: Factors Loading, Reliability, Validity, and Multi-collinearity Diagnostics

Latent Variable	Items	Outer loadings	Cronbach's alpha	CR	AVE	VIF
Green Policy	BPP_3	0.792	0.733	0.849	0.652	1.359
	BPP_4	0.781				1.476
	BPP_5	0.848				1.684
-Green Investment	IGP_1	0.746	0.815	0.872	580	1.807
	IGP_2	0.866				2.783
	IGP_3	0.84				2.263
	IGP_4	0.72				1.572
	IGP_5	0.61				1.292
Green image	GI_1	0.86	0.75	0.856	0.666	1.797
	GI_2	0.824				1.863
	GI_3	0.761				1.281
Green Human Resources Management	GHRM_1	0.832	0.868	0.904	0.655	2.715
	GHRM_2	0.842				2.923
	GHRM_3	0.821				2.267
	GHRM_4	0.79				2.177
	GHRM_5	0.758				1.845
Environmental Performance	ENP_1	0.846	0.7	0.83	0.623	1.488
	ENP_2	0.846				1.481
	ENP_3	0.661				1.243
Economic Performance	EP_1	0.819	0.724	0.832	0.559	2.398
	EP_2	0.756				2.396
	EP_3	0.834				1.688
	EP_4	0.546				1.277
Social Performance	SOP_4	0.871	0.619	0.839	0.723	1.251
	SOP_5	0.829				1.251

Table 2: Heterotrait -Monotrait (HTMT) Ratio and Fornell and Larker Criterion

HTMT							
	EP	ENP	GHRM	GI	IGP	GP	SOP
EP							
ENP	0.590						
GHRM	0.617	0.498					
GI	0.362	0.403	0.461				
IGP	0.613	0.551	0.717	0.411			
GP	0.633	0.522	0.888	0.475	0.887		
SOP	0.496	0.375	0.52	0.238	0.454	0.610	-

Fornell and Larker							
	EP	ENP	GHRM	GI	IGP	GP	SOP
EP	0.748						
ENP	0.402	0.789					
GHRM	0.493	0.405	0.809				
GI	0.279	0.311	0.379	0.82			
IGP	0.474	0.423	0.616	0.328	0.762		
GP	0.464	0.381	0.714	0.358	0.686	0.808	
SOP	0.33	0.263	0.389	0.175	0.321	0.415	0.845

Economic Performance, ENP: Environmental Performance, GHRM: Green Human Resources Management, GI: Green Image, IGP: Investment in Green Project, Green Policy, SOP: Social Performance.

4.2 Structural Model Estimation

Our structural model includes two Higher Order Construct (HOC) which reflective-reflective in nature and two lower order constructs (LOCs). Green banking practices was treated as IV whereas sustainable performance was treated as DV and both of IV and DV in our model are HOCs. Furthermore, our model considers GHRM and GI both are LOCs as mediator. Serial mediation effect was assessed through both mediators simultaneously.

4.2.2 Inner Model Estimation: Total Effects

Once the fitness of our measurement model is established and it revealed that all the loadings along with estimation of validity and reliability remained well above their respective thresholds, we moved further to estimate our inner model which includes 6 direct paths, 4 simple mediation and 1 serial mediation (see Figure 1).

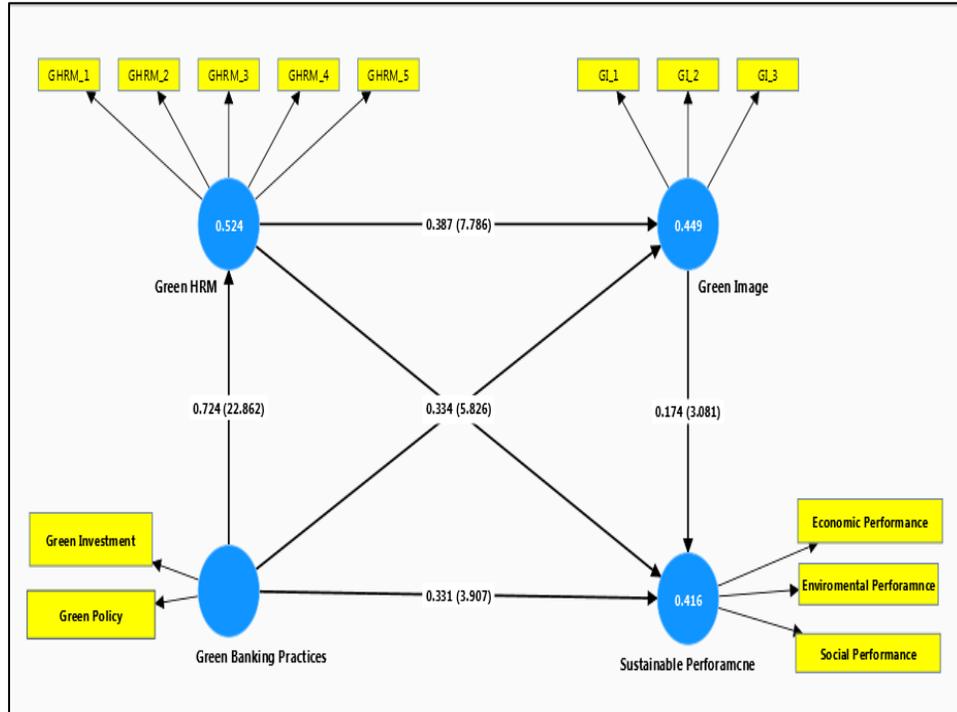


Figure 2: Structural Model

Total effect as available in Table 3 shows total effect of green banking practices on green HRM is significant ($\beta: 0.724$, $t: 22.862$, $p\text{-value}: 0.000$) and similar findings are available with green banking practices to green image ($\beta: 0.614$, $t: 13.904$, $p\text{-value}: 0.000$), green banking practices to sustainable performance ($\beta: 0.599$, $t: 10.624$, $p\text{-value}: 0.000$), Green HRM to green image ($\beta: 0.387$, $t: 7.786$, $p\text{-value}: 0.000$), green HRM to sustainable performance ($\beta: 0.290$, $t: 3.806$, $p\text{-value}: 0.000$) and green image to sustainable performance ($\beta: 0.174$, $t: 3.081$, $p\text{-value}: 0.002$). Our inner model estimates revealed significant path co-efficient which support the relations of this model.

Table 3: Structural Model (Total Effect)

	Original Sample (O)	Standard Deviation (STDEV)	t-statistic	P- value	Result
Green Banking Practices → Green HRM	0.724	0.032	22.862	0.000	Supported
Green Banking Practices → Green Image	0.614	0.044	13.904	0.000	Supported
Green Banking Practices Sustainable Performance	0.599	0.056	10.624	0.000	Supported
Green HRM → Green Image	0.387	0.050	7.786	0.000	Supported
Green HRM → Sustainable Performance	0.290	0.076	3.806	0.000	Supported
Green Image → Sustainable Performance	0.174	0.057	3.081	0.002	Supported

All effects are significant at 0.05 on 5000 sample bootstrap

4.2.3 Mediation Analysis

Structural model of the study includes 4 simple mediation paths and 1 serial mediation path i.e. effect of green banking practices on sustainable performance through GHRM(H1), the effect of green banking practices on green image through GHRM (H2). effect of green banking practices on sustainable performance through green image (H3), effect of green human resources management on sustainable performance through green image (H4), impact of green banking practices on sustainable performance through serial mediation of green human resources management and green image (H5). As presented in table 4, the specific indirect effect of GBP on SP through GHRM was found positive and significant (H1: $\beta = 0.161$, t-value = 2.789, p-value = 0.005). Total effect of GBP on SP found significant ($\beta 0.599$ t 10.624, p-value: 0.000) and direct effect green banking practices in the presence of GHRM (mediator) is also significant ($\beta 0.331$ t: 3.907, p-value: 0.000) which leads to establishment of complementary partial mediation role of GHRM between GBP and SP as per criteria defined by Hair et al. (2019).

The specific indirect effect of green banking practices on green image through green human resources management found positive and significant (H2: $\beta =0.280$, t =7.576, P value =0.000). Total effect of green banking practices on green image also found significant ($\beta: 0.614$, t: 13.904, p-value: 0.000) and indirect effect green banking practices on green image in the presence of GHRM (mediator) also found positive and significant ($\beta: 0.331$, t:5.826,

p-value: 0.000) which leads to establishment of complimentary partial mediation role of GHRM between GBP and GI.

The specific indirect effect of GBP on SP through GI found positive and significant (H3: $\beta = 0.058$, $t = 2.818$, $P \text{ value} = 0.005$). According to Hair et al. (2019) criteria, the direct effect of GBP on SP in the existence of GI (mediator) is still significant ($\beta = 0.331$, $t\text{-value} = 3.907$, $P \text{ value} = 0.000$), and the Total effect of GBP on SP was found to be significant ($\beta = 0.599$, $t\text{-value} = 10.625$, $P \text{ value} = 0.000$). This suggests that GI plays a complementary partial mediation role between GBP and sustainable performance. According to a 5,000-sample bootstrap, there was a significant indirect influence of green HRM on SP through GI (H 4: $\beta = 0.067$, $t = 2.716$, $P \text{ value} = 0.007$). Additionally, a substantial overall impact of green HRM on SP was found positive and significant, ($\beta = 0.290$, $t = 3.806$, $p\text{-value} = 0.000$). The direct effect of GHRM on SP in the existence of a GI as a mediator is still significant ($\beta = 0.223$, $t = 2.823$, $p\text{-value} = 0.000$). So, according to the criteria of Hair et al. (2019), this results in the development of a complementary partial mediation role of GI between GHRM and sustainable SP.

Apart from the above discussed indirect effects, of our model included one more effect of GBP on sustainable performance through serial mediation of GHRM and GI. The specific indirect of GBP on SP through GHRM and GI found significant (H5: $p \text{ value} = 0.007$, $t = 2.695$, $\beta = 0.049$). Furthermore, the analysis also revealed a significant total effect between GBP and SP ($\beta = 0.599$, $t\text{-value} = 10.624$, $p\text{-value} = 0.000$). Additionally, the direct effect, when considering mediators such as GHRM and GI, was also found to be positively significant ($\beta = 0.331$, $t\text{-value} = 3.907$, $p\text{-value} = 0.000$) in the relationship between GBP and sustainable performance. Consequently, the complementary partial mediation role of green human resources management and GI in the chain mediation effect between sustainable banking practices and overall performance is identified as significant

Therefore, all the mediation effects we observed align with the proposed mediation paths. The cumulative indirect effect of GBP on sustainable performance, mediated serially by GI and GHRM, was determined to be significant.

Table 4: Mediation Analysis

Variables	Quantiles				
	10 th	25 th	50 th	75 th	95 th
CF	0.1288* (0.2839)	0.07309* (0.1877)	0.0168* (0.1068)	0.0121** (0.0879)	0.0435* (0.1018)
GDP	0.3145*** (0.4424)	0.4926*** (0.2925)	0.6723*** (0.1666)	0.7647*** (0.1369)	0.8649*** (0.1589)
FDI	-0.3356*** (0.1150)	-0.2391*** (0.0761)	-0.1416*** (0.0435)	-0.0915*** (0.0355)	-0.0372*** (0.0416)
IND	1.1299*** (0.618)	-1.0495*** (0.4087)	-0.9682*** (0.2325)	-0.9265*** (0.1915)	-0.8811*** (0.2216)
TRD	-0.1171*** (0.2172)	-0.1785 (0.1436)1	-0.2405*** (0.0817)	-0.2723*** (0.0673)	-0.306*** (0.0779)
POP	0.0488 (0.1636)	0.0447 (0.1082)	0.0406 (0.0615)	0.0385 (0.0507)	0.0362 (0.0586)
Constant	4.2772*** (6.7424)	3.1358*** (4.4584)	1.9835*** (2.5369)	1.3912*** (2.0893)	2.749*** (2.4182)

*Significant at 0.05 based on 5000 sample bootstraps

** Significant at 0.10 based on 5000 sample bootstraps

GBP: Green Banking Practices, GHRM: Green Human Resources Management,

GI: Green Image, SP: Sustainable Performance

4.3 Model explanatory power

PLS SEM approach focuses on maximization of the explained variance (R^2) of endogenous construct. Falk and Miller (1992) recommend that adequate variance is observed when R^2 value exceeds 0.10. Cohen (1988) suggests R^2 value of 0.26 as substantial, 0.13 as moderate, and 0.02 as weak. Similarly Chin (1998) taking more conservative view considers R^2 value 0.67 as substantial, 0.33 as moderate, and 0.19 as weak. Hence, our model carry substantial explanatory power as per Falk and Miller (1992) and Cohen (1988) criteria and moderate explanatory power as Chin (1998) criteria.

Similarly, f-square value as an alternate measure of model explanatory power considers the rate of change due in R^2 due to removal of any exogenous variable. Threshold for adequate effect of change is of 0.02 as small, 0.15 as medium, and 0.35 as large (Cohen, 1988). Table 5 shows all the predictive variables carry considerable effect on the R^2 value of respective outcome variable. Hence our model has considerable explanatory power.

Table 5: Explanatory Power of the Model

Predictive Variables	Outcomes variable	R ²	f ²
Green Banking Practices	Sustainable Performance	0.416	1.101
Green Human Resources Management			0.129
Green Image			0.029
Green Banking Practices	Green Image	0.449	0.097
Green Human Resources Management			0.036
Green Banking Practices	Green Human Resources Management	0.524	0.081

5. Findings and Discussion

The finding of the study revealed that GBP has a significant impact on SP using green HRM as mediator. The study supports the resource-based view (RBV) and the ability-motivation-opportunity (AMO) theories that propose that employee behavior is influenced by integrating environmental programs in HR systems that result in sustainability. Recent meta-analytic findings reveal that, in all industries, green HRM mediates the relationship between green initiatives and sustainable performance (Bindeeba et al., 2025). Likewise, Gul, Karaatmaca, and Raza (2025) discovered that green HRM increased employees’ knowledge and resilience in Pakistan banking industry, therefore, increasing sustainability. Consequently, data of this study can support the statement that HRM is a vital internal capability that sets green practices in banking sector of Pakistan.

Another finding of the study indicates that GI is greatly and significantly affected by GBP indirectly via green HRM. This implies that as banks deploy HRM to restructure green activities (e.g., training, green incentives), they generate credible communications of green commitment that boost the green image. Signaling Theory can be aligned with the findings in Bangladesh, where green HRM enhanced the reputational profitability of green banking (Chowdhury et al., 2025). Moreover, the work by Verma and Suri (2025) demonstrated the way the green HRM in Indian banks was converted into a better outside recognition and performance of employees. These findings demonstrate that green HRM does not only facilitate the internal green culture but also the external legitimacy that reduce the threat of environmental degradation.

Furthermore, the result of the GI between GBP and SP indicating a significant indirect correlation between the two variables, reveals that banks gain more legitimacy and trust among stakeholders as GBP advances its green image. This aligns with the legitimacy theory and stakeholder theory because the two theories hold that reputation plays a significant role in the sustainability results. The green image is a great mediator of

performance and green practices in the research conducted by South Asian banks (Chowdhury et al., 2025). Therefore, findings of this research reveal that GI is a strategic intangible asset that correlates long-term performance with GBP.

The result of another objective of this study is that SP of the green HRM pathway mediated by GI is important in the sense that it demonstrates that HR-led project and green employee behavior are able to positively impact perceptions of the company externally, hence leading to sustainable outcomes. This line of action proves that HR systems enhance business branding and make corporations more productive internally. The patterns appear to be the same in research in the service sector, where green HRM enhanced green image and reputation, and this enhanced performance (Islam, 2025; Faeni, 2025). The implication of this research is that the banking personnel are performing the roles of green identity ambassador besides putting in place sustainability policies, meaning that the bank is increasing the level of its relationships with stakeholders.

This study also investigates the serial mediation role of green HRM and GI between GBP and SP. The entire serial mediation model was very relevant, as it established that GBP enhance SP by initially stimulating green HRM, which in turn improves GI, which eventually leads to sustainable performance. This orderly process is aligned with the Socially Responsible Investment (SRI) Theory that states that a sustainable finance strategy must be both internally aligned (green HRM) and externally legitimate (green image), to earn performance benefits. Similar sequential trends are identified in meta-analytic results of green HRM to green initiatives that are transformed into employee action, thereby improving corporate reputation and performance (Bindeeba et al., 2025). Further studies in South Asia show that both a green HR system and corporate image reinforce the connection between green finance and performance (Chowdhury et al., 2025). This literature is one step ahead because findings of this study indicate that green HRM and external image-green image mechanisms are two sides of a coin and should be applied simultaneously by banks to guarantee their sustainable performance.

5.1 Managerial Implication

The present study's findings suggest that managers need to understand that GHRM and GI are mediating factors that help connect sustainable long-term performance with green banking practices. This relationship suggests that a proactive approach to GHRM and GI improved the environmental, economic and social performance. By recognizing serial mediation, managers can adopt a strategy for sustainability, and it is proved that GBP, GHRM, and GI are associated with achieving sustainable performance. Managers should make sure that GHRM plans and GBP adhere to changing environmental standards. A green image, strengthened by open reporting and environmentally friendly operations, can also aid in winning over regulatory agencies and obtaining permanent permits to conduct business in environmentally concerned markets. If employees are engaged and well-trained, GBP will have a greater influence on sustainable performance. Innovation in new banking services and products is also made possible by incorporating sustainability into

GHRM operations. Managers should emphasize creating green financial products (e.g., green bonds, eco-loans) and integrate sustainability metrics into financial decision-making. In conclusion, the serial mediation model, which uses GHRM and GI as mediators, shows that SP in green banking is influenced by strategic HRM practices, successful brand management, and ecologically friendly banking activities. Managers need to adopt a wide-ranging, integrated approach to embed sustainability in every aspect of the organization, from HR to customer interactions. Banks can enhance their environmental, financial, and social outcomes by fostering a green culture, promoting green behaviors, and maintaining a positive green image.

5.2 Theoretical Implication

The socially responsible investment (SRI) theory is based on the belief that profit making in financial undertakings must not be the sole driving force but rather be socially, ethically and environmentally oriented. Examples of such practices in green banking include the approaches which involve environmental responsibility in financial services such as the provision of eco-friendly loans, green financing, and regulations of sustainable investing. By balancing between environmental, social responsibility, and economic performances, SRI calls on banks to fulfill their roles to the benefit of the society and not solely due to financial gains. Thus, SRI offers the conceptual basis to the idea that green practices in banking increase the business image and long-term sustainability performance.

The study provides a theoretical improvement on the relationship between GBP and SP by arguing that green image and green HRM elements influence the direct effect of GBP on sustainability results. SP is ultimately driven by how practices are applied green HRM and perceived (through green image), broadening our knowledge of the role that green banking plays in advancing sustainability. To sum up, this serial mediation model's theoretical implications substantially contribute to several important areas, such as competitive advantage, sustainable performance, green branding, green HRM, and SRI theory. By showing that the effectiveness of green practices is mediated by both human resource strategies and green image, it draws attention to how difficult it is to achieve sustainability in banking. The study enhances current ideas and offers a more thorough framework for comprehending how GBP transfer into SP by including GHRM and GI as mediators.

5.3 Limitations and Future Research

Pakistan's banks are actively promoting the use of green banking services, the development of digital economy of the country was stimulated by the government of Pakistan. These are some of the limitations in the study that could be mitigated through further research in this area. The significant limitation of the research would be its small scope since it only looks at the commercial working in southern Punjab. The future research efforts should be further expanded so as to enrich the knowledge on GBP with a bigger sample size of banks. Also, it is implied that the concept of green reporting can be included in future research work as

a mediating variable to evaluate the role of GBP and green reporting on sustainable performance. This study was aimed at the evaluation of the serial mediating effect of GHRM and green image on GBP. It ought to have, however, extensively delved into the views of the bankers who design green banking strategies, as well as, develop policies. Hence, the researchers are advised to explore the perspectives and opinions of these key stakeholders in the future to improve the understanding of GBP. Further research would provide good results by ensuring that the area of the study is extended to cover a larger geographical area of the nation. This research was limited to the particular context of the southern Punjab but a more widespread analysis would be valuable in offering important understandings on the local differences and nuances in measuring GBP and sustainable performance. They also have the opportunity to test the effects of GBP on mitigation and adaptation of climate change by incorporating the concept of green finance and green audit, as an independent mediating variable between the green banking practices and sustainable performance.

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