International Journal of Business and Sustainable Development (IJBSD)
Vol. 3 Issue 2, July – December 2026 (e-ISSN No. 3139-4752)
DOI:10.67948/ijbsd/v3.i2.3209

Green Human Resource Management Practices and Economic Sustainability in Commercial Banks of Rupandehi District

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Abstract

Green human resource management (GHRM) may support organizational sustainability, but its relationship with economic sustainability in Nepal's banking sector is under-researched. This study examined associations between five GHRM practices and economic sustainability among commercial-bank employees in Rupandehi District, Nepal. A quantitative cross-sectional survey of 310 employees was analysed using partial least squares structural equation modelling (PLS-SEM); importance-performance map analysis (IPMA) and necessary condition analysis (NCA) were also reported. The structural model explained 87.4% of the sample variance in economic sustainability (R-squared = 0.874). Green recruitment and selection, performance appraisal, rewards and compensation, and employee involvement had statistically significant positive path estimates; green training did not ($p = 0.513$). Employee involvement had the largest path coefficient (0.529) and the highest reported importance in the IPMA (0.529). Because the study is cross-sectional and uses convenience sampling, the findings are associational and should not be generalized beyond the study sample without further evidence.

Keywords: Green Human Resource Management; Economic Sustainability; Commercial Banks; PLS-SEM; Employee Involvement.

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I. INTRODUCTION

In an era of increasing economic competitiveness and ecological awareness, economic sustainability has become a critical issue for business survival, profitability, and growth (Dyllick & Hockerts, 2002; Elkington, 1997). In the present business environment, a company is no longer judged solely by its economic performance but is also evaluated by its ability to exist as an economically viable and ecologically aware entity (Elkington, 1997). As ecological, resource-based, environmental, and regulatory issues become more pressing, companies are being increasingly driven to adopt economic sustainability as a way of improving organizational efficiency and promoting economic development while conserving resources (Bansal & DesJardine, 2014; Porter & van der Linde, 1995). Consequently, economic sustainability is a notion that describes how businesses can operate in a manner that ensures ethical and effective utilization of resources for economic development and profit (Bansal & DesJardine, 2014; Dyllick & Hockerts, 2002).

The banking sector is one of the essential pillars of economic growth and stability while contributing significantly to the financial systems' sustainability (Levine, 2005; Scholtens, 2009). Moreover, the banking sector is among the key functions driving sustainable banking and financial systems in economic sustainability (Scholtens, 2009; Weber, 2017). Today, at national and international levels, banks are adopting sustainable banking practices like green banking, digitization, paperless banking, and energy-saving measures. These initiatives have been proven effective in saving costs, improving customer relations, raising productivity, and, consequently, increasing the banks' profitability (Gazi,

2024; Umair, 2023). Besides, sustainable banking leads to conserving resources and higher productivity, thus enhancing economic sustainability (Kelvin-Iloafu et al.2023).

Nepal's banking sector is currently undergoing a significant rise and contributing to the country's economy. Commercial banks are considered essential players in mobilizing financial resources and promoting business activities, as well as encouraging investment in the country (Nepal Rastra Bank, 2024). However, with the international trend towards sustainable development, Nepalese commercial banks are embracing green banking activities such as online banking, electronic fund transfers, electronic documentation, and energy-efficient technologies (Nepal Rastra Bank, 2024; IFC, 2023).. These techniques reduce paper use, operational costs and environmental impact, while increasing efficiency and service offerings. Therefore, green banking increases economic sustainability by increasing production, minimizing waste and encouraging long-term financial performance.

However, the practice of GHRM practices in the Nepalese commercial banks is still at emerging stage. Nepalese banks are increasingly adopting technology and operational sustainability strategies but the human resource dimension of sustainability is typically neglected. Many organizations have yet to fully embed sustainability into their HR policies and practices, and this hinders the contribution of employees to environmental projects. GHRM practices in Nepal are still at the emerging stage and there is no effective institutionalization in the organizational structures (Chapagain & Dangol, 2024).Similar problems are observed in other poor countries where enterprises cannot fully adopt GHRM due to low understanding, lack of commitment from the organization and resource constraints (Senanayake et al., 2025).Green Human Resource Management (GHRM) refers to the practice of integrating environmental sustainability into HR services like recruitment, training, performance management, employee engagement and reward systems. The objective of GHRM is to develop environmentally conscious employees who are willing to participate in the organization's sustainability and enhance efficiency and performance (Nawangsari & Sutawijaya, 2019). Adopting GHRM techniques, organizations can develop a green corporate culture that fosters environmental awareness, resource efficiency, and sustainable work practices.

Key Theoretical Perspectives to Understand the Importance of GHRM. The resource-based view (RBV) paradigm assume that human resources are important strategic assets and can be transformed into sustained competitive advantages with effective management. Employees' knowledge, skills and creativity allow organizations to become more efficient, save costs and achieve their long-term sustainability goals (Sulistiawan et al., 2025). Similarly, stakeholder theory stresses the need to satisfy the expectations of stakeholders, such as employees, consumers, regulators and society, and this can be achieved by adopting sustainable practices. Environmental concerns are increasing and this has made stakeholders expect that organizations be accountable and employ sustainable measures. Yahya and Zghar (2023) found that GHRM might be helpful for companies to meet stakeholders' expectations and enhance sustainable performance.

A large body of literature shows that GHRM practices have a favorable effect on organizational sustainability. These studies have shown that green recruitment, training, employee engagement and reward systems lead to efficiency, productivity and cost savings. Training of staff in environmental practices is expected to lead to green behavior which result in reduction of waste and enhancement of resource management (Friday & Okwurume, 2016). In the banking sector Green Human Resource Management is linked to performance, a competitive advantage and sustainability. Green Human

Resource Management is also linked to these things as we see in the work of Erkasap from 2024 and Gul and others from 2025. When workers care about the environment this leads to efficiency and sustainability for the organization as shown by Hussain and Raja in 2026. Green Human Resource Management is a way to save money and it helps avoid wasting resources, which is important for economic sustainability. GHRM also helps directly in economic sustainability through cost-effectiveness and the removal of operational waste. Such practices include paperless communication, digital documentation and energy efficiency which help minimize administrative and operational costs. Training the workers to use resources efficiently will also boost production and reduce needless costs. These improvements help the organization to be more profitable, financially stable, and able to grow over the long run.

Therefore, GHRM should be perceived not just as an environmental initiative but also as an approach to achieve economic sustainability. But, the implementation of GHRM practices is not uniform across the organizations. While several institutions have focused on green recruiting and training, they have not emphasized other important HR tasks such as performance appraisal and incentive system. This restricts the encouragement of sustainable employee behavior. The GHRM is not well integrated into the strategic HR systems of the Nepalese commercial banks which hinders its overall effectiveness (Chapagain & Dangol, 2024).

Furthermore, implementation still faces challenges with limits such as lack of organizational support, lack of knowledge, lack of training and lack of strong green culture. Prior studies on GHRM and sustainability. But the majority of the research were on environmental or organizational performance, rather than economic sustainability. But economic sustainability (cost efficiency, productivity and financial performance) is still poorly explored notably in developing countries (Gul et al., 2025). Similarly, there is absence of empirical study work in Nepalese commercial banks notably in context of semi urban area like Rupandehi district. This indicates a want for further studies to better comprehend the function of GHRM in boosting economic sustainability. The investigation was conducted in the commercial banks of Rupandehi district. It is significant both theoretically and practically. Theoretically, it adds to the literature by relating GHRM practices to economic sustainability. The results will assist bank managers and HR specialists to design successful green HR strategies to improve efficiency, reduce expenses and increase financial performance. It would also support the policy makers for sustainable banking practices and long run economic development in Nepal.

1.1 Research question

RQ1. *How are green recruitment and selection, green training, green performance appraisal, green rewards and compensation, and green employee involvement associated with economic sustainability in commercial banks in Rupandehi District?*

RQ2. *Which GHRM practices, if any, constitute necessary conditions for achieving higher levels of economic sustainability in commercial banks in Rupandehi District?*

1.2 Research Objective

RO1. *To examine the associations between green recruitment and selection, green training, green performance appraisal, green rewards and compensation, green employee involvement, and economic sustainability in commercial banks in Rupandehi District.*

RO2. *To assess whether the five GHRM practices constitute necessary conditions for achieving higher levels of economic sustainability in commercial banks in Rupandehi District.*

2. LITERATURE REVIEW

2.1 Theoretical Review

The study was conducted based on the Resource-Based View, Institutional Theory, Ability Motivation Opportunity Theory, and the Triple Bottom Line perspective. The said theories were used to understand the relationship between Green Human Resource Management (GHRM) and the economic sustainability of commercial banks. Resource-Based View deals with the acquisition of resources that are valuable, rare, and difficult to imitate for sustainable competitive advantage (Wernerfelt, 1984; Barney, 1991). GHRM plays a significant role in the attainment of competitive advantage through the investment in human resources with green competencies. The study revealed that the implementation of GHRM practices enhances the knowledge and skills of employees while also motivating them towards sustainability. This has a positive effect on the reduction of costs and an increase in performance, therefore, leading to the economic sustainability of commercial banks. The findings of the study are in line with previous studies that demonstrated the role of GHRM in the creation of resources and competitive advantage (Sulistiawan et al., 2025; Kelvin-Iloafu et al., 2023).

Institutional Theory focuses on how organizations respond to demands from stakeholders by adopting particular practices, processes, and structures (DiMaggio & Powell, 1983; Meyer & Rowan, 1977). The study revealed the way commercial banks of Nepal respond to the demands of stakeholders by implementing GHRM practices. For example, the study showed how institutional demands from regulators and other stakeholders have compelled commercial banks to infuse green practices in their human resource management to achieve economic sustainability while also satisfying other stakeholders (Chapagain & Dangol, 2024).

Ability Motivation Opportunity Theory deals with how ability, motivation, and opportunity impact work performance (Appelbaum et al., 2000). The study demonstrated how GHRM can be used to enhance the ability, motivation, and opportunity of employees in order to improve performance. For instance, the study revealed that the ability of employees can be improved through training while their motivation and opportunity can be enhanced through green performance appraisal and rewards. This is likely to have a positive effect on performance and economic sustainability. Additionally, previous studies have demonstrated that GHRM can be used to increase the motivation and commitment of employees towards sustainability and performance (Hussain & Raja, 2026).

Finally, the study used the Triple Bottom Line perspective to show how GHRM can be used to achieve the economic sustainability of commercial banks. The perspective illustrates how organizations can achieve economic growth together with fulfilling environmental and social expectations (Elkington, 1997). The study illustrated how GHRM can be used to fulfill the environmental and social expectations together with the economic benefits. For instance, the study recommends the use of digital banking to reduce the costs related to paper waste and at the same time to fulfill the demands of environmentally conscious customers and stakeholders. The conclusion of the study is consistent with the previous research that has suggested the role of GHRM in achieving the organizational economic sustainability through fulfilling the social and environmental responsibilities (Umair et al., 2023; Yahya & Zargar, 2023). The study used Resource-Based View, Institutional Theory, Ability-

Motivation-Opportunity Theory and the Triple Bottom Line perspective to have a better understanding of how GHRM can be used to attain economic sustainability of commercial banks in Nepal.

2.2 Empirical Review

2.2.1 Green recruitment and selection on Economic sustainability

Green recruitment and selection is a green Human Resource Management practice that assists in attracting environmentally conscious and sustainable workers which ultimately enhances the organizational performance and competitiveness by adopting green initiatives. Previous studies have revealed that green recruitment and selection practices have positive relationship with company performance and sustainability. For example, Chapagain and Dangol (2024) established that recruitment on environmental values enhanced workers' sustainable performance whereas Nawangsari and Sutawijaya (2019) found that recruitment and selection on environmental criteria improved organizational performance. In a similar study, Hussain and Raja (2026) found that workers' green values had a positive relationship with organizational competitiveness. The past research, however, was conducted in different organizational settings; hence there is a need to establish the effect of green recruitment and selection on the economic sustainability of commercial banks in Nepal due to the lack of past studies that establish the relationship between green human resource management practices and economic sustainability. Based on the literature mentioned the hypothesis is formulated below:

H1: There is a positive and significant effect of green recruitment and selection on economic sustainability.

2.2.2 Green training on economic sustainability

Green training usually targets training and motivating workers to incorporate green practices in their daily work activities. As a result, green training often promotes workers' awareness, responsibility, and knowledge, which subsequently increases organizational performance. For example, Chapagain and Dangol (2024) as well as Rushya and Dissanayake (2020) found that green training motivated workers to adopt sustainable approaches towards work activities, which consequently enhanced performance. Additionally, Hussain and Raja (2026) found that training had a positive effect on workers' motivation and productivity. On the contrary, past studies demonstrate that organizational commitment and employee engagement mediate the relationship between green training and performance. Therefore, green training is a green human resource management practice that should be considered essential for organizational improvement. More studies need to be conducted to establish the influence of green training on the economic sustainability of commercial banks due to the limited past research.

H2: There is a positive and significant effect of green training on economic sustainability.

2.2.3 Green performance appraisal on economic sustainability

Green performance appraisal is a process of incorporating environmental aspects into the appraisal system so that the employees are motivated and rewarded for their efforts in contributing towards organizational sustainability (Renwick et al., 2013; Tang et al., 2018). It can be achieved by integrating environmental goals in performance appraisal to motivate employees to participate in green initiatives and accomplish organizational goals. Past studies reveal that green performance appraisal has a positive effect on employees' environmental behavior, organizational performance, and sustainability (Amjad et al., 2021; Nawangsari & Sutawijaya, 2019). However, it requires commitment from the organization and management to incorporate sustainability practices and policies in the human

resource management system (Yahya & Zargar, 2023). Most of the past studies have focused on the effect of green performance appraisal on environmental performance and employees' behavior. Few studies have explored the impact on economic sustainability, especially in the banking sector of the developing countries like Nepal. Hence, the present study focuses on exploring the impact of green performance appraisal on the economic sustainability of the banks in Nepal.

H3: Green performance appraisal has a positive and significant effect on economic sustainability.

2.2.4 Green reward and compensation on economic sustainability

Green reward and compensation refer to the use of rewards and monetary incentives to motivate employees to perform their duties in an environmentally friendly manner to enhance organizational and environmental sustainability. Reward and compensation policies that promote green performance are critical in motivating employees to improve performance while promoting organizational sustainability. Most prior research has revealed the role of green reward and compensation in promoting economic sustainability. Nawangsari and Sutawijaya (2019) observed that rewarding environmentally friendly behaviors was a motivator for workers, which led to an improvement in organizational performance and productivity. Likewise, Hussain and Raja (2026) indicated that monetary and non-monetary rewards positively relate to employees' sustainable performance. In contrast, Friday and Okwurume (2016) revealed that reward and compensation policies improve employee performance and organizational effectiveness. However, Chapagain and Dangol (2024) observed that the environmental reward and compensation policies were poorly implemented in the commercial banking sector of Nepal. Therefore, although green reward and compensation policies play a critical role in promoting economic sustainability, organizational commitment is often needed to implement these policies. As a result, there is a need to reveal the effect of green reward and compensation on economic sustainability in the Nepalese commercial banking industry.

H4: There is a positive and significant effect of green reward and compensation on economic sustainability.

2.2.5 Green employee involvement on economic sustainability

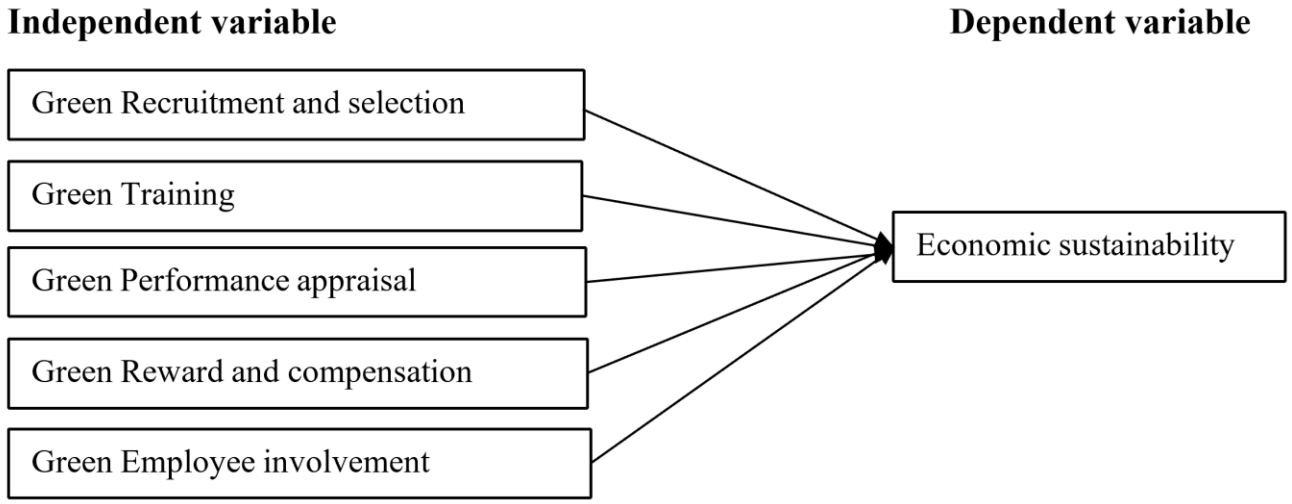
Green employee involvement requires motivating employees to take part in decision-making processes and other organizational practices, such as those that facilitate problem solving initiatives and organizational sustainability. Green employee involvement is one of the critical aspects of Green Human Resource Management practices, which encourages employee's motivation, creativity, and performance. Past research has demonstrated the role green employee involvement plays in organizational sustainability. For example, Hussain and raja (2026) confirm that employee involvement boosted organizational efficiency and productivity by encouraging environmentally-friendly initiatives. However, Rushya and Dissanayake (2020) demonstrate that worker involvement in other organizational initiatives increased their commitment to organizational sustainability while at the same time facilitating innovative approaches to promoting organizational sustainability. Similarly Chapagain et al (2024) argued that commercial banks of Nepal should make more efforts towards motivating employees for organizational sustainability. Therefore, past research demonstrates the role green employee involvement plays in organizational sustainability. However, most of the previous work has focused on the role green employee involvement plays in environmental performance, employee performance, and overall organizational sustainability. Thus, this study intends to find out

the impact of green employee involvement on economic sustainability particularly in the commercial banking industry of Nepal.

H5: Green employee involvement has a positive and significant effect on economic sustainability.

2.3 Theoretical Framework

Figure 1 - *Conceptual Framework*



Note. Adapted from Amjad et al. (2021), Chapagain and Dangol (2024), Tang et al. (2018), and Yahya and Zargar (2023).

The conceptual framework shown in the figure 1 of this research was developed based on previous studies conducted on green human resource management and sustainability. Green human resource management consists of green recruitment, green training and development, green performance appraisal, green compensation and rewards, and employee involvement. These constructs were considered independent variables because they contribute towards employees' environmental awareness or responsiveness and productivity (Amjad et al., 2021; Chapagain & Dangol, 2024). The variables have a positive relationship with organizational performance. On the other hand, economic sustainability was identified as the dependent variable of this research. It encompasses cost reduction, process improvement, profitability, and productivity (Yahya & Zargar, 2023).

Therefore, the conceptual framework of this study seeks to establish a connection between green human resource management and a bank's economic sustainability.

3. RESEARCH METHODOLOGY

3.1 Research design

The study used a quantitative, cross-sectional design with descriptive and correlational analyses to examine associations between GHRM practices and economic sustainability. Data were collected at one point in time. Accordingly, the design can identify associations but cannot establish cause-and-effect relationships or changes over time.

3.2 Population and sample

The population of this study consists of the employees working in the commercial banks of the Rupandehi district. The reason to select commercial banks as the setting for this study includes the fact

that they contribute to understanding the in-depth practice of Green Human Resource Management, and also provide sufficient information regarding the economic sustainability of the banks.

The study analysed responses from 310 employees of commercial banks in Rupandehi District. Participants were recruited using convenience sampling, so the sample may not represent all employees in the district or other banking settings. The manuscript cites the 10-times rule as its sample-size rationale; please verify the rule's applicability and report a more appropriate justification based on the model, expected effect sizes, and statistical power. Please also clarify how many questionnaires were distributed, returned, and retained for analysis.

3.3 Nature and Sources of Data

The study used quantitative data to establish the relationship between Green Human Resource Management practices and economic sustainability of commercial banks. This is because the information needed to come up with the findings of the study could be gathered directly from respondents by using the questionnaire. The questionnaire was administered to the selected employees of the commercial banks located in the Rupandehi district since they could provide first-hand information regarding Green Human Resource Management practices and economic sustainability of the commercial banks. Apart from primary data, secondary data was also used in the completion of the study. Secondary data used included books, journals, research papers, publications, and other material relevant to the research. Thus, both primary and secondary data were used to ensure that the study is reliable and comprehensive.

3.4 Tools for Data Collection

Data were collected using a structured questionnaire with two sections: respondent characteristics and measures of GHRM practices and economic sustainability. GHRM items were adapted from Tang et al. (2018), and economic-sustainability items from Chow and Chen (2012) and Paulraj (2011). Responses were recorded on a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The manuscript states that a pilot study was conducted; please report its sample, procedure, and resulting changes, if applicable.

3.5 Methods for Data Analysis

The data were analysed using SmartPLS. Descriptive statistics summarised respondents' characteristics and item responses. PLS-SEM was used to estimate the measurement and structural models, and bootstrapping was used to assess path coefficients and statistical significance. The cross-sectional design supports interpretation of associations, not causal effects.

The measurement model was evaluated using indicator loadings, Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant-validity assessments. The structural model was evaluated using path coefficients, bootstrapping-based t-statistics and p-values, and R-squared. Effect sizes, IPMA, and NCA were also reported.

4. DATA ANALYSIS AND INTERPRETATION

4.1: Respondent’s profile

Table 1 - *Respondent’s profile*

Gender	f	%	**Age**	f	%
Male	152	49.0	Below 30	91	29.4
Female	158	51.0	30-40	136	43.9
Qualification	f	%	41-50	83	26.8
10+2	44	14.2			
Bachelor	88	28.4	**Marital status**	f	%
Master	129	41.6	Married	209	67.4
Above master	49	15.8	Unmarried	101	32.6

Table 1 presents the demographic characteristics of the respondents. Female participants constituted a slightly higher proportion (51%) than males (49%). Most respondents were aged 30–40 years (43.9%)**,** followed by those below 30 years (29.4%)**.** Regarding educational qualifications, the majority held a master's degree (41.6%), followed by a bachelor's degree (28.4%)**.** In terms of marital status, 67.4% of the respondents were married, while 32.6% were unmarried.

4.2: Common Method Bias (CMB)

Table 2 - *Common method bias using Randomized method*

	VIF
Economic sustainability -> Random variable	3.427
Green employee involvement -> Random variable	4.238
Green performance appraisal -> Random variable	3.566
Green recruitment and selection -> Random variable	3.786
Green rewards and compensation -> Random variable	4.210
Green training -> Random variable	1.440

Table 2 reports full-collinearity VIF values from 1.440 to 4.238. Although all values are below 5, several exceed the more conservative 3.3 threshold sometimes used in this diagnostic. These results do not establish that common method bias is absent. Please clarify the random-variable procedure and report any procedural safeguards or additional diagnostics. The data have already been analysed; the statement that data collection can now proceed should be removed.

4.3: Measurement model assessment

Table 3 - *Assessment of scale items*

Name	**Outer loading**	**VIF**	**Mean**	**Standard deviation**
ES1	0.854	4.264	5.123	1.741
ES2	0.849	4.122	5.081	1.595
ES3	0.802	2.478	4.668	1.839
ES4	0.866	3.213	5.061	1.553
ES5	0.846	3.623	5.074	1.731
ES6	0.748	2.608	3.613	1.951
GEI1	0.869	2.737	3.174	1.869
GEI2	0.79	2.4	3.752	1.902
GEI3	0.864	2.748	3.803	1.97
GEI4	0.837	2.228	4.697	1.902
GEI5	0.766	1.782	5.913	1.429
GPA1	0.876	3.028	5.797	1.518

GPA2	0.903	3.788	5.69	1.664
GPA3	0.917	4.233	4.997	1.777
GPA4	0.745	1.86	5.458	1.753
GPA5	0.777	1.737	5.074	1.731
GRC1	0.857	2.397	5.148	1.831
GRC2	0.822	2.27	5.426	1.549
GRC3	0.857	2.465	5.71	1.62
GRC4	0.794	2.001	5.132	1.628
GRC5	0.796	1.824	5.026	1.787
GRS1	0.73	1.566	4.987	1.812
GRS2	0.903	3.678	5.1	1.877
GRS3	0.806	2.334	5.548	1.495
GRS4	0.881	3.103	4.742	1.733
GRS5	0.873	2.787	5.61	1.454
GT1	0.831	2.787	5.516	1.575
GT2	0.834	3.024	5.671	1.543
GT3	0.924	4.164	5.545	1.569
GT4	0.895	3.57	4.916	1.749
GT5	0.807	1.968	4.561	1.734

Table 3 reports outer loadings, VIFs, means, and standard deviations. The displayed outer loadings range from 0.730 to 0.924, so all listed items exceed 0.70. The sentence about retaining items below 0.70 is inconsistent with the displayed results and appears to describe a decision that was not needed for the items shown; please confirm whether any items were removed before this table was produced. Item VIF values range from 1.566 to 4.264, below the stated threshold of 5.

Variance Inflation factor (VIF)

Item-level VIF values in Table 3 range from 1.566 to 4.264 and are below the stated threshold of 5. This indicates no VIF values exceed that criterion; it should not be interpreted as proof that no multicollinearity exists under every possible threshold.

4.4: Construct Reliability and Validity

Table 4 - *Construct Reliability and Validity*

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Economic sustainability	0.908	0.911	0.929	0.687
Green employee involvement	0.883	0.889	0.915	0.683
Green performance appraisal	0.899	0.905	0.926	0.716
Green recruitment and selection	0.895	0.897	0.923	0.707
Green rewards and compensation	0.883	0.888	0.914	0.681
Green training	0.912	0.930	0.934	0.738

Table 4 reports Cronbach's alpha values from 0.883 to 0.912, composite reliability values (rho_A and rho_C) from 0.888 to 0.934, and AVE values from 0.681 to 0.738. These values meet the thresholds cited in the manuscript (reliability above 0.70 and AVE above 0.50), supporting internal consistency and convergent validity under those criteria. Please correct the spelling of Cronbach's alpha and avoid saying AVE means each item individually explains more than 50% of variance; AVE is a construct-level measure.

4.5: Heterotrait and Monotrait (HTMT) ratio of correlations

Table 5 - *Heterotrait and Monotrait (HTMT) ratio of correlations*

	Economic sustainability	Green employee involvement	Green performance appraisal	Green recruitment and selection	Green rewards and compensation	Green training
Economic sustainability						
Green employee involvement	0.786					
Green performance appraisal	0.604	0.817				
Green recruitment and selection	0.647	0.715	0.724			
Green rewards and compensation	0.840	0.756	0.801	0.754		
Green training	0.485	0.392	0.489	0.510	0.608	

Table 5 reports HTMT values from 0.392 to 0.840. All displayed values are below the stricter 0.85 criterion. This supports discriminant validity under that criterion, but HTMT is not a multicollinearity test. The table is Table 5, not Table 4.5.

4.6. Fornell- Larcker Criterion

Table 6 - *Fornell- Larcker Criterion*

	Economic sustainability	Green employee involvement	Green performance appraisal	Green recruitment and selection	Green rewards and compensation	Green training
Economic sustainability	0.829					
Green employee involvement	0.791	0.826				
Green performance appraisal	0.821	0.738	0.846			
Green recruitment and selection	0.762	0.696	0.648	0.841		
Green rewards and compensation	0.778	0.687	0.721	0.825	0.826	
Green training	0.457	0.377	0.462	0.474	0.561	0.859

In Table 6, each diagonal square-root-of-AVE value exceeds the corresponding off-diagonal construct correlations, consistent with the Fornell-Larcker criterion. This is evidence for discriminant validity under that criterion; it does not demonstrate an absence of measurement multicollinearity. Interpret this result alongside the HTMT assessment in Table 5.

Table 4.7: Model fit Indices

Table 7 - *Model fit Indices*

	Saturated model	Estimated model
SRMR	0.074	0.076
d_ULS	3.528	3.528
d_G	n/a	n/a
Chi-square	∞	∞
NFI	n/a	n/a

Table 7 reports SRMR values of 0.074 for the saturated model and 0.076 for the estimated model. The table lists NFI and d_G as not available and does not provide a chi-square value; therefore, the narrative claim that NFI equals 0.916 is unsupported by the displayed table. Please verify the fit-index output and either correct Table 7 or remove the NFI claim. SRMR alone should not be used to claim satisfactory explanatory power.

Table 4.8: F-square (effect size)

Table 8 - *F-square*

	f-square	**Effect size**
Green employee involvement -> Economic sustainability	0.826	Large effects
Green performance appraisal -> Economic sustainability	0.202	Large effect
Green recruitment and selection -> Economic sustainability	0.025	Small effect
Green rewards and compensation -> Economic sustainability	0.023	Small effect
Green training -> Economic sustainability	0.001	No effect

Table 8 reports f-squared values of 0.826 for green employee involvement (large), 0.202 for performance appraisal (large), 0.025 for recruitment and selection and 0.023 for rewards and compensation (small), and 0.001 for training (negligible/no effect under the conventional 0.02 reference). The table supports the conclusion that training's estimated effect size is negligible; this does not by itself establish that training has no practical value.

Table 4.9: R-square and R-square adjusted

Table 9 - *R-square*

	R-square	**R-square adjusted**
Economic sustainability	0.874	0.872

Table 9 reports R-squared = 0.874 and adjusted R-squared = 0.872 for economic sustainability. Thus, the model accounts for 87.4% of the sample variance in the outcome (adjusted estimate: 87.2%). These are model explanatory statistics, not evidence that GHRM practices cause economic sustainability or that the result generalizes beyond the sample.

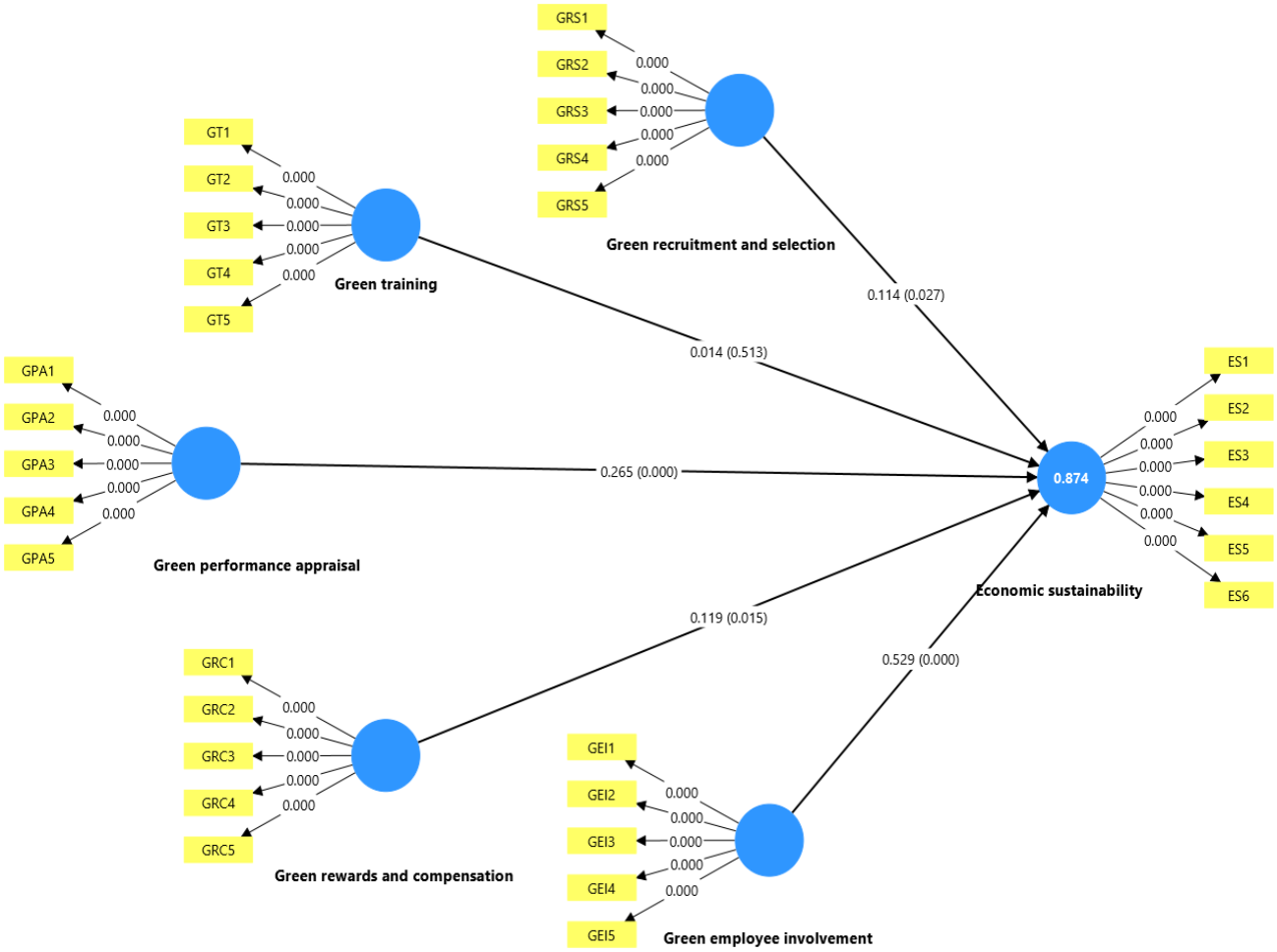


Table 4.10: Hypothesis testing using bootstrapping

Table 10 - *Hypothesis testing using bootstrapping*

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Decision
H1: Green recruitment and selection -> Economic sustainability	0.114	0.111	0.051	2.216	0.027	Accepted
H2: Green training -> Economic sustainability	0.014	0.013	0.022	0.655	0.513	Not accepted
H3: Green performance appraisal -> Economic sustainability	0.265	0.266	0.046	5.753	<0.001	Accepted
H4: Green rewards and compensation -> Economic sustainability	0.119	0.120	0.049	2.433	0.015	Accepted
H5: Green employee involvement -> Economic sustainability	0.529	0.530	0.048	10.952	<0.001	Accepted

Table 10 supports four of the five hypotheses at the 0.05 significance level: recruitment and selection (beta = 0.114, p = 0.027), performance appraisal (beta = 0.265, p < 0.001), rewards and compensation (beta = 0.119, p = 0.015), and employee involvement (beta = 0.529, p < 0.001). The training path is not statistically significant (beta = 0.014, p = 0.513), so H2 is not supported. Employee involvement has the largest reported path coefficient.

Table 4.11: Importance performance Map

Table 11 - *Importance performance Map*

	Performance	Importance
Green employee involvement	68.619	0.529
Green performance appraisal	76.907	0.265
Green recruitment and selection	66.913	0.114
Green rewards and compensation	71.588	0.119
Green training	48.003	0.014
Mean	66.406	0.2082

Table 11 reports the highest importance for green employee involvement (0.529), with performance of 68.619. Performance appraisal has importance of 0.265 and performance of 76.907. The original paragraph incorrectly assigns the involvement performance value to performance appraisal and gives a projected outcome change not established by the table. Please verify any projected IPMA change using the original output; based on Table 11 alone, employee involvement has the highest reported importance.

Figure 2 - *Importance- performance map*

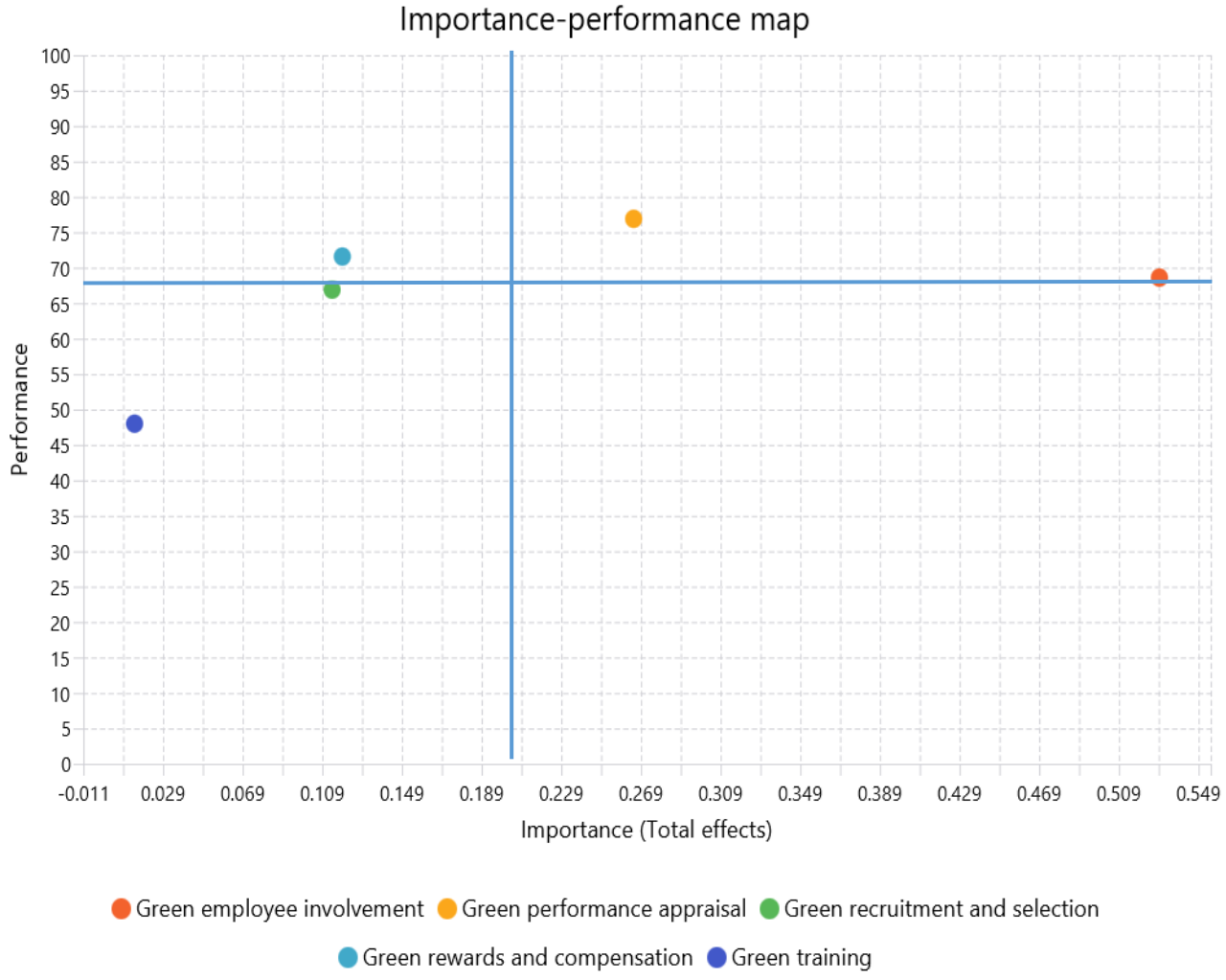


Table 4.12 necessary condition analysis

Table 12 - Bottleneck percentile

Economic sustainability	LV scores - green employee involvement	LV scores - green performance appraisal	LV scores - green recruitment and selection	LV scores - green rewards and compensation	LV scores - green training
0.000%	NN	NN	NN	NN	NN
10.000%	1.6%	NN	NN	0.6%	NN
20.000%	3.8%	NN	NN	0.6%	NN
30.000%	8.3%	5.8%	NN	0.6%	NN
40.000%	8.3%	5.8%	NN	0.6%	NN
50.000%	8.3%	5.8%	NN	0.6%	NN
60.000%	10.0%	5.8%	2.5%	8.7%	NN
70.000%	10.0%	5.8%	2.5%	8.7%	NN
80.000%	10.0%	5.8%	2.5%	8.7%	NN
90.000%	12.9%	5.8%	25.4%	14.8%	NN
100.000%	67.4%	5.8%	60.6%	53.8%	1.9%

Table 12 reports NCA bottleneck levels. At the 10% outcome target, employee involvement is 1.6% and rewards and compensation is 0.6%; the other practices are marked NN. At 30%-50%, performance appraisal is 5.8%, employee involvement is 8.3%, and rewards and compensation is 0.6%. At 60%-80%, employee involvement is 10.0%, performance appraisal is 5.8%, recruitment and selection is 2.5%, and rewards and compensation is 8.7%; at 90%, employee involvement is 12.9%, performance appraisal is 5.8%, recruitment and selection is 25.4%, and rewards and compensation is 14.8%; at 100% the table reports employee involvement 67.4%, recruitment and selection 60.6%, rewards and compensation 53.8%, performance appraisal 5.8%, and training 1.9%. These entries are bottleneck levels, not percentages of contribution. Please define NN and the scale/units, and verify the unusually high 100% thresholds against the original NCA output before drawing practical conclusions.

5. DISCUSSION

This study examined associations between five GHRM practices and economic sustainability among commercial-bank employees in Rupandehi District. The model explained 87.4% of the sample variance in economic sustainability. Four path estimates were positive and statistically significant; green training was not statistically significant. Employee involvement had the largest path coefficient and highest reported IPMA importance. These findings are consistent with the proposed theoretical perspectives but do not establish causal effects or support generalisation across industries, given the cross-sectional convenience sample.

Among the five practices, green employee involvement had the largest path coefficient and the highest reported importance. Performance appraisal, rewards and compensation, and recruitment and selection also had positive statistically significant path estimates, whereas training did not. The available data do not establish why the training estimate was nonsignificant; explanations such as limited or irregular training should be presented as hypotheses unless supported by additional evidence. The findings should not be described as generalizable across industries.

6. CONCLUSION AND IMPLICATIONS

6.1 conclusion

This study examined the associations between GHRM practices and economic sustainability among employees of commercial banks in Rupandehi District. Recruitment and selection, performance appraisal, rewards and compensation, and employee involvement had positive statistically significant path estimates; training did not. Employee involvement had the largest estimated path coefficient. The cross-sectional convenience-sample design limits causal interpretation and generalisability. The results

provide context-specific evidence that warrants replication using transparent sampling and verified measures.

6.2 Implications

This study has several theoretical implications, including expanding the Green Human Resource Management and Economic Sustainability knowledge from both theoretical and practical points of view. This article demonstrated that green human resource management practices used in Nepalese commercial banks could improve economic sustainability. Therefore, this study extended the previous knowledge and contributed to understanding the relationship between Green Human Resource Management and Economic Sustainability of commercial banks from the perspective of Rupandehi district, Nepal. Additionally, this study demonstrated that green human resource management practices could increase the ability, motivation, and opportunity of employees, which was consistent with the Resource-Based View and Ability–Motivation–Opportunity theories.

This article also has several practical implications. It implies that commercial banks should think of adopting green human resources management practices to promote economic sustainability. More specifically, managers should motivate employees to be involved in green development activities, reward and compensate responsible behaviors, encourage green recruitment and selection practices, and implement green performance appraisal to improve economic sustainability. Furthermore, this study implies that managers should think of aligning green training activities with employee participation since green training has no significant relationship with the economic sustainability of commercial banks. Finally, this article can be useful to policymakers and relevant government agencies to formulate policies that promote green human resource management practices in the banking sector, thus improving the sustainability of the Nepalese economy.

7. LIMITATION AND FUTURE DIRECTIONS

This study has several limitations. It was conducted among commercial banks in Rupandehi District and used convenience sampling, limiting generalisability. Its cross-sectional design does not show how the relationships change over time and cannot establish causality. The measures were self-reported and may be subject to common method and response biases. Future studies could use probability-based or broader samples, longitudinal designs, additional data sources, and further validated measures of economic sustainability.

Further, the future research can build on the findings of this study to assess the long-run impact of GHRM practices on economic sustainability through longitudinal studies. Additionally, this study can be replicated in commercial banks of different regions of Nepal and compare the results. Besides, other studies can be conducted in different industries or countries to generalize the findings. More variables such as green organizational culture, green leadership, green innovation, digitalization, employee commitment, and organizational support, among others, should be considered as moderators or mediators in the relationship between GHRM practices and economic sustainability. These factors will help further understand the mechanism through which GHRM practices affect the economic sustainability of the organization and add to the theoretical and methodological knowledge of sustainable management.

8. REFERENCES

- Amjad, F., Abbas, W., Zia-Ur-Rehman, M., Baig, S. A., Hashim, M., Khan, A., & Rehman, H. U. (2021). Effect of green human resource management practices on organizational

sustainability: the mediating role of environmental and employee performance. *Environmental Science and Pollution Research*, *28*(22), 28191-28206.

- Bansal, P., & DesJardine, M. R. (2014). *Business sustainability: It is about time*. *Strategic Organization, 12*(1), 70–78.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of management*, *17*(1), 99-120.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological bulletin*, *88*(3), 588.
- Bland, J. M., & Altman, D. G. (1997). Statistics notes: Cronbach's alpha. *Bmj*, *314*(7080), 572.
- Bollen, K. A., & Stine, R. A. (1992). Bootstrapping goodness-of-fit measures in structural equation models. *Sociological Methods & Research*, *21*(2), 205-229.
- Chapagain, B. R., & Dangol, S. (2024). Green human resource management practices in Nepalese commercial banks: a qualitative inquiry among human resource managers. *SAIM Journal of Social Science and Technology*, *1*(1), 91-105.
- Chow, W. S., & Chen, Y. (2012). Corporate sustainable development: Testing a new scale based on the mainland Chinese context. *Journal of business ethics*, *105*(4), 519-533.
- Cohen, J. (1988). Set correlation and contingency tables. *Applied psychological measurement*, *12*(4), 425-434.
- Dean, N. N., & Senanayake, S. P. S. (2025). Green Human Resource Management Practices in Licensed Commercial Banks: Evidence from Sri Lanka. *International Journal of Research and Scientific Innovation (IJRSI)*, *12*(11).
- DiMaggio, P. J., & Powell, W. W. (2000). The iron cage revisited institutional isomorphism and collective rationality in organizational fields.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business strategy and the environment*, *11*(2), 130-141.
- Elkington, J., & Rowlands, I. H. (1999). Cannibals with forks: The triple bottom line of 21st century business. *Alternatives Journal*, *25*(4), 42.
- ERKASAP, A. (2024). THE Impact of Green Human Resource Management on Organizational Competitive Advantage: A Case Study in the Turkish Banking Sector. *International Journal of Humanities and Education Research*, *6*(1), 272-291.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of marketing research*, *18*(1), 39-50.
- Gazi, M. A. I., Al Masud, A., bin Kabir, S., Chaity, N. S., bin S Senathirajah, A. R., & Rahman, M. K. H. (2024). Impact of green banking practices on green CSR and sustainability in private commercial banks: the mediating role of green financing activities. *Journal of Sustainability Research*, *6*(4).
- Gul, T., Karaatmaca, A. G., & Raza, A. (2025). Impact of green human resources management practices on sustainability through organizational resilience and organizational learning in Pakistan's banking sector. *Sustainability*, *17*(5), 2087.
- Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of multivariate data analysis*, *1*(2), 107-123.
- Hair Jr, J. F., Matthews, L. M., Matthews, R. L., & Sarstedt, M. (2017). PLS-SEM or CB-SEM: updated guidelines on which method to use. *International Journal of multivariate data analysis*, *1*(2), 107-123.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R: A workbook*. Springer international publishing.

- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2013). Partial least squares structural equation modeling: Rigorous applications, better results and higher acceptance. *Long range planning*, *46*(1-2), 1-12.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, *31*(1), 2-24.
- Hair, J., & Alamer, A. (2022). Partial Least Squares Structural Equation Modeling (PLS-SEM) in second language and education research: Guidelines using an applied example. *Research methods in applied linguistics*, *1*(3), 100027.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the academy of marketing science*, *43*(1), 115-135.
- Hu, L. T., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to under parameterized model misspecification. *Psychological methods*, *3*(4), 424.
- Hussain, N., & Raja, A. M. (2026). The Role of Employee Green Behavior on the Relationship between Green Human Resource Management and Sustainable Performance in the Banking Industry of Pakistan. *The Critical Review of Social Sciences Studies*, *4*(1), 1043-1061.
- Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. *British journal of applied science & technology*, *7*(4), 396-403.
- Kelvin-Iloafu, L. E., Monyei, F. E., Ukpere, W. I., Obi-Anike, H. O., & Onyekwelu, P. N. (2023). The impact of human capital development on the sustainability and innovativeness of deposit money banks' workforces. *Sustainability*, *15*(14), 10826.
- Kundu, S., & Kumar, R. S. (2025). Emerging Models of Green Financing in Selected South Asian Countries. In *Financing of Sustainable Development Goals (SDGs) Challenges and Opportunities* (pp. 141-170). Cham: Springer Nature Switzerland.
- Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, *1*, 865-934.
- Meyer, J. W., & Rowan, B. (1977). Institutionalized organizations: Formal structure as myth and ceremony. *American journal of sociology*, *83*(2), 340-363.
- Nawangsari, L. C., & Sutawijaya, A. H. (2019). Green human resources management for business sustainability in banking institutions. *International Journal of Managerial Studies and Research*, *7*(9), 12-16.
- Ogbu Edeh PhD, F., & Okwurume, C. N. (2019). Green human resource management and organisational sustainability of deposit money banks in Nigeria. *Journal of Management Sciences*, *3*(1), 224-235.
- Paulraj, A. (2011). Understanding the relationships between internal resources and capabilities, sustainable supply management and organizational sustainability. *Journal of Supply Chain Management*, *47*(1), 19-37.
- Perera, M. (2024). The Impact of Sustainable Human Resource Management Strategies on Organizational Performance in the Licensed Commercial Banks in Sri Lanka: Moderating Role of Line Manager Involvement. *International Journal of Contemporary Business Research*, *3*(1).
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of applied psychology*, *88*(5), 879.
- Renwick, D. W., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. *International journal of management reviews*, *15*(1), 1-14.
- Rushya, R. M., & Dissanayake, D. M. T. D. (2020). The relationship between green human resource management and environmental sustainability: A case based on state commercial bank in Matale district. *Wayamba Journal of Management*, *11*(2).

- Saari, U. A., Damberg, S., Frömbling, L., & Ringle, C. M. (2021). Sustainable consumption behavior of Europeans: The influence of environmental knowledge and risk perception on environmental concern and behavioral intention. *Ecological Economics*, *189*, 107155.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Treating unobserved heterogeneity in PLS-SEM: A multi-method approach. In *Partial least squares path modeling: Basic concepts, methodological issues and applications* (pp. 197-217). Cham: Springer International Publishing.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 587-632). Cham: Springer International Publishing.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In *Handbook of market research* (pp. 587-632). Cham: Springer International Publishing.
- Scholtens, B. (2009). Corporate social responsibility in the international banking industry. *Journal of business ethics*, *86*(2), 159-175.
- Sulistiawan, J., Herachwati, N., & Khansa, E. J. R. (2025). Barriers in adopting green human resource management under uncertainty: the case of Indonesia banking industry. *Journal of Work-Applied Management*, *17*(2), 200-219.
- Tang, G., Chen, Y., Jiang, Y., Paillé, P., & Jia, J. (2018). Green human resource management practices: scale development and validity. *Asia pacific journal of human resources*, *56*(1), 31-55. https://doi.org/10.1111/1744-7941.12147
- Umair, S., Waqas, U., Mrugalska, B., & Al Shamsi, I. R. (2023). Environmental corporate social responsibility, green talent management, and organization's sustainable performance in the banking sector of Oman: The role of innovative work behavior and green performance. *Sustainability*, *15*(19), 14303.
- Van der Linde, C. (1995). *Green and competitive: ending the stalemate.*
- Weber, O. (2017). Corporate sustainability and financial performance of Chinese banks. *Sustainability Accounting, Management and Policy Journal*, *8*(3), 358-385.
- Wernerfelt, B. (2003). A resource-based view of the firm. *International Library of Critical Writings in Economics*, *163*, 276-285.
- Yahya, A. A., & Zargar, P. (2023). Achieving corporate sustainability through green human resource management: The role of CSR in the banking industry of a developing country. *Sustainability*, *15*(14), 10834.
- Zhu, Q., Sarkis, J., & Lai, K. H. (2008). Confirmation of a measurement model for green supply chain management practices implementation. *International journal of production economics*, *111*(2), 261-273.