

THE IMPACT OF FINTECH ADOPTION AND GREEN BANKING PRACTICES ON BANK SUSTAINABILITY PERFORMANCE: GREEN FINANCING AS A MEDIATOR

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ABSTRACT

This study explores the influence of FinTech adoption and green banking practices on the sustainability performance of banks in Sri Lanka, with a particular focus on the mediating role of green financing. It seeks to address the research gap related to the interaction between digital transformation and sustainability in the Sri Lankan banking industry. This study uses a positive research approach and a survey-based methodology to gather data from 250 managerial-level staff members of Sri Lanka's systemically important institutions. Partial least squares structural equation modeling (PLS-SEM) is used to examine the gathered data in order to evaluate the connections among green banking practices, FinTech uptake, and sustainability performance. The findings reveal that both green banking practices and FinTech adoption significantly positively influence bank sustainability performance. Moreover, green financing serves as a mediator in these relationships, amplifying the effects of green banking and FinTech adoption on sustainability outcomes. The study offers valuable insights for Sri Lankan banks, urging them to integrate FinTech and green banking practices into their operations to improve sustainability. The findings suggest that green financing is crucial for supporting sustainable projects for attracting socially responsible investors and enhancing bank performance in line with sustainability goals. This study is among the first to examine the combined effects of green banking, green financing, and FinTech adoption in Sri Lanka. By extending the Resource-Based View (RBV) theory and offering strategic advice for financial institutions operating in emerging economies, it adds to the body of knowledge in academia.

Keywords: Bank Sustainability Performance, Fintech Adoption, Green Banking, Green Financing, Resource-Based View (RBV)

1. Introduction

The most significant topic in the 21st century is sustainability, due to the threat of global environmental challenges, including the depletion of natural resources and biodiversity issues (Khushbu & Agarwal, 2024). According to the Global Sustainable Investment Alliance (GSIA, 2022), sustainable investment strategies, which include green bonds and ESG (Environmental, Social, and Governance) funds, surpassed \$35 trillion in assets by 2022, representing over 40% of global assets under management (GLOBAL SUSTAINABLE INVESTMENT REVIEW 2022). Especially during the COVID pandemic, sustainability has become a forward-looking path for the long-term growth of organizations. The environment came with the question of how to degrade the mask, as the accumulation of single-use plastics and non-biodegradable materials posed a growing threat to ecosystems and wildlife, leading to a global push for more sustainable alternatives. So many organizations, including the financial sector, start to focus on sustainable practices not only to meet regulatory standards but also to align with shifting consumer expectations and environmental responsibility (Kumar & Prakash, 2018).

1.1. Research Problem and Gap

Banks are the major revenue-generating source in the financial sector of an economy. They should be vigilant about the environmental changes and the sustainable shift. The Bank for International Settlements (BIS) developed the BASEL Accords, shaping sustainable finance through global banking standards. BASEL II allows banks to assess risks in green investments using international ratings, and climate-related risk assessments are gradually being integrated in Sri Lanka with BASEL III. BASEL IV (2023) introduced capital frameworks for climate risk stress testing (Oyetade et al., 2023). In this context, green banking practices and FinTech adoption are transforming the financial sector by advancing sustainability goals through green financing. Green banking promotes eco-friendly growth and provides a competitive edge, with institutions like HNB focusing on sustainable infrastructure, such as funding green

buildings (Hatton National Bank Plc, n.d.). Similarly, BOC supports Sri Lanka's sustainable banking initiative (A Force of Strength, n.d.). FinTech enhances financial accessibility and efficiency by converting traditional services into digital solutions, including AI, blockchain, and digital payment systems (Tian et al., 2023). These advancements reduce paper transactions, minimize physical branch visits, and align with green goals and carbon reduction strategies, driving sustainable economic growth (Pizzi et al., 2021; Tian et al., 2023; Xu et al., 2025). Although significant advancements in FinTech adoption and green banking practices are evident, green financing is still perceived as risky, and its widespread adoption faces challenges, particularly due to regulatory gaps and limited digital literacy, especially in rural areas (Silva, 2021; Siddik et al., 2023). While international literature has begun exploring the role of FinTech in supporting sustainable practices (Yan et al., 2022), the Sri Lankan context remains underexplored, with local studies focusing primarily on individual green practices or policy development (Fernando & Fernando, 2017; Lebbe et al., 2021). There is a clear lack of comprehensive analysis on how the integration of FinTech adoption and green financing can jointly improve the sustainability performance of Sri Lankan banks (Rahman et al., 2024), highlighting a critical gap in both academic and practical research.

1.2. Research Objectives

From an academic perspective, we hope to fulfill the research gap related to the Sri Lankan context and expand the RBV theory framework related to sustainable finance. From an industry perspective, we hope to provide the best insight for CBSL and SLBA to develop sustainable strength policies and provide strategic recommendations for banks related to the adoption of green financing and FinTech adoption. This study aims to fill this gap by exploring how green banking practices and FinTech adoption influence bank sustainability performance and how green financing mediates these relationships. Addressing this gap, the current study investigates four key research objectives.

1. R01: To examine the relationship between green banking practices and bank sustainability performance.
2. R02: To examine the relationship between FinTech adoption and bank sustainability performance.

3. R03: To examine the mediating role of green financing in the relationship between green banking practices and sustainability performance in banks.
4. R04: To examine the mediating function of green financing in the relationship between FinTech adoption and bank sustainability performance.

The above objectives are crucial given the rising importance of digital transformation and sustainable banking in addressing global environmental challenges. This paper explores how FinTech adoption and green banking enhance bank sustainability and the role of green financing as a mediator. It examines the interplay of green banking, FinTech, and green financing in promoting sustainability, contributing to both academic theory and policy recommendations.

2. Literature Review

2.1. Bank's Sustainability Performance

Sustainability is directly related to the UN's Sustainable Development Goals (SDGs), which highlight lowering carbon footprints, safeguarding ecosystems, and adopting renewable energy (Green Finance for Sri Lankan Financial Institutions, n.d.). Sustainable banking practices are growing in Sri Lanka to address economic and environmental challenges. The Bank for International Settlements (BIS) has shaped sustainable finance through the BASEL Accords (BASEL II, III, and IV) (Oyetade et al., 2021). The Central Bank of Sri Lanka (CBSL) aids green lending through the sustainable finance roadmap (Sri_lanka_sustainable_finance_roadmap_2019.Pdf, n.d.). Bank sustainability performance refers to the ability of financial institutions to match their operations with environmental, social, and governance (ESG) goals, particularly in promoting environmental sustainability. This includes financing green initiatives like renewable energy projects and reducing the carbon footprint of banking operations. Digital banking innovations, green loans, and carbon credit financing play crucial roles in advancing sustainable banking and driving economic resilience in Sri Lanka (Green Finance for Sri Lankan Financial Institutions, n.d.).

2.2. Green Financing

Financial products, services and investments that promote environmentally friendly initiatives and facilitate the shift to a low-carbon and more sustainable economy are collectively referred to as "green financing" (M. Migliorelli & P. Dessertine, 2019). To allocate cash to projects and activities that help the environment, it entails integrating environmental factors into financial decision-making processes (Akomea-Frimpong et al., 2022). The usage of Green Bonds is one strategic financial tool for directing funding toward projects that promote ecological preservation and sustainable development objectives (Malcolm et al., 2022). Loans created especially for sustainability-related projects, such as the installation of renewable energy, energy-efficient buildings, sustainable agriculture, and the creation of clean technology, are offered by banks and other financial institutions (Fatica et al., 2021). Little is known about the intricate effects of green financing on different businesses, despite the fact that RU is becoming more important in advancing sustainability.

2.3. FinTech Adoption

Fintech is a rapidly growing business and a source of innovation that promises to stimulate research across all disciplines because digital connectivity is crucial for sustainability performance and operational efficiency (Yan et al., 2022). The research suggests that fintech, as part of Industry 4.0, can help SMEs transition to sustainable business models by providing crucial funding (Pizzi et al., 2021; Muganyi et al., 2022). Fintech also fosters financial inclusion through mobile money services, reaching underbanked populations in areas without traditional banking. Most high-growth SMEs, rather than relying on equity, depend on debt-based financing (Giaretta & Chesini, 2021). Fintech has accelerated supply chain finance adoption by providing IT-driven financial solutions that simplify loans and transactions for SMEs (Soni et al., 2022). Evidence shows that financial availability is a key factor in a company's environmental sustainability. However, the role of institutional financial support in enhancing business sustainability performance remains underexplored.

2.4. Green Banking Practices

Green banking is rooted in sustainable development, originated in Western nations and guides financial institutions toward eco-friendly practices (Hadi et al., 2023). Triodos Bank, founded in the Netherlands in 1980, is credited with coining the term “green banking,” promoting environmental sustainability while enhancing competitive advantage and reducing operating costs (Hadi et al., 2023). Globally, countries like Myanmar provide corporate loans for green waste management, renewable energy, organic products, electric vehicles, and educational initiatives. Green banking technologies include paperless banking, solar-powered ATMs, net banking, and sustainable energy initiatives (Fernando & Fernando, 2017). In Sri Lanka, banks are increasingly adopting the triple-bottom-line framework—People, Planet, and Profit—to measure sustainability (Fernando & Fernando, 2017). Out of 30 licensed banks, both public and private institutions have integrated multiple green banking practices, positioning green banking as a key factor in future competitiveness (Malsha et al., 2020; Shaumya, 2016).

2.5. Green Banking Practices on Sustainability Performance

Green banking terms to the integration of social, ecological, and environmental factors in banking operations to promote sustainability (Rahman et al., 2024). It stimulates environmentally friendly practices, reduces the carbon footprint and enhances operational efficiency through technology and shifting customer behaviors (Fernando & Fernando, 2017). Green banking initiatives are vital for economic sustainability in the banking sector, helping banks adapt to trends and avoid financial penalties (Kumar et al., 2024; Lebbe et al., 2021). In Sri Lanka banks assess environmental records, evaluate loan proposals, and offer green loans to support eco-friendly projects (Malsha et al., 2020). The country has demonstrated a growing commitment to environmental sustainability by increasingly adopting green banking principles within its financial system. As a result, the following is the first hypothesis that has been developed:

H1: There is a significant relationship between green banking practices and bank sustainability performance.

2.6. Fintech Adoption on Banks' Sustainability Performance

By increasing operational efficiency and transparency through technologies like digital banking, blockchain, and AI-driven services, the incorporation of FinTech into traditional financial institutions dramatically improves sustainability performance. By minimizing waste, cutting down on energy use, and improving resource management, these technologies support environmental sustainability. Additionally, FinTech supports social, economic, and environmental sustainability by enabling investments in sustainable projects (Chueca Vergara et al., 2021). Additionally, FinTech promotes financial inclusion by giving marginalized groups greater access to financial services, which propels sustainable development even more. As a result, FinTech adoption bridges the gap between innovation and environmental aims, revolutionizing the financial sector's sustainability initiatives. Consequently, the following hypothesis has been created for the research:

H2: There is a significant relationship between FinTech adoption and bank sustainability performance.

2.7. Green Financing as a Mediator between Green Banking Practices and Bank Sustainability Performance

Green financing plays a major role in sustainable finance by enabling financial institutions to adopt sustainable practices, particularly in banks with ESG funds focusing on development (Niyazbekova et al., 2021). Banks are increasingly using green financing as a strategic approach to improve sustainability performance, offering tailored financial products with distinct terms and conditions (Kumar et al., 2024; Akomea-Frimpong et al., 2022). Green banking incorporates environmental considerations into operations, funding eco-friendly initiatives, implementing sustainable corporate practices, and encouraging customers to embrace green banking. These practices promote sustainable growth while reducing the ecological impact of financial operations, supporting the study's hypothesis. Therefore, the hypothesis of this study is the following assertion.

H3: Green financing significantly mediates the relationship between green banking practices and bank sustainability performance.

From a theoretical standpoint, the mediating role of green financing can be explained through the Resource-Based View (RBV) and the Natural

Resource-Based View (NRBV). Green banking practices represent organizational capabilities and internal processes that promote environmental responsibility. However, these internal practices alone may not directly lead to enhanced sustainability performance unless they are converted into financial outcomes through effective capital allocation. Green financing acts as that conversion mechanism channeling banks' green initiatives into measurable financial and sustainability results. This aligns with empirical findings by Kumar et al. (2024) and Akomea-Frimpong et al. (2021), who noted that green financing enables institutions to monetize their sustainability-oriented resources by funding environmentally responsible projects, thereby strengthening the pathway from green practices to performance. Hence, this study posits green financing as a mediator rather than a moderator, as it explains how and why green banking influences sustainability through financial intermediation.

2.8. Green Financing as a Mediator between Fintech Adoption and Bank Sustainability Performance

By providing banks with the money, they need for sustainable projects, such as green bonds and investment funds, green financing acts as a bridge to incorporate FinTech solutions and promote sustainable results (Meng & Shaikh, 2023). By streamlining investment procedures, automating risk evaluations, and enabling real-time environmental performance data, fintech helps investments match sustainable objectives. Banks can boost sustainability and finance eco-friendly projects by integrating fintech with green financing (Arulraj & Annamalai, 2020). Incorporating environmental, social, and governance (ESG) factors into decision-making, supported by green financing, helps reduce environmental risks and improve sustainability (Dwivedi et al., 2025). This integration is crucial for enhancing bank performance and promoting sustainable lending. Hence, the following hypothesis is proposed:

H4: Green financing significantly mediates the relationship between FinTech adoption and bank sustainability performance.

2.9. Conceptual Framework

The Resource-Based View (RBV) theory was introduced by Barney in 1991 (Kumar et al., 2024) and serves as the foundation for this study. The theory suggests that competitive advantage comes from VRIN resources, those that are rare, valuable, unique, and non-substitutable (Jafari & Rezaee, 2014). To sustain this advantage, organizations must create unique, hard-to-imitate strategies (Jafari & Rezaee, 2014; Sajuyigbe et al., 2025). A resource-based approach links internal analysis with an organization's vision and goals to strengthen its competitive position (Manjala, 2014). To maintain an edge, organizations must continually adapt to shifts in resources (Jafari & Rezaee, 2014; Lubis, 2022). Resources include tangible assets like machinery and intangible ones such as trademarks, copyrights, and brand recognition (Jafari & Rezaee, 2014). The RBV provides insights into how formal and informal institutions, along with internal resources, influence environmental and sustainability efforts, particularly in green financing. Efficient green fund allocation, prioritizing high-impact sectors, supporting industrial sustainability, and aligning with the 2030 SDG Agenda are key aspects of RBV in sustainability (Sajuyigbe et al., 2025). By focusing on green resources, RBV provides a strategic approach for gaining a competitive edge in the green economy (Kumar et al., 2024). This study extends the traditional Resource-Based View (RBV) by positioning green financing as a strategic capability that transforms banks' green and digital resources into measurable sustainability performance. While the RBV traditionally explains competitive advantage through valuable, rare, inimitable, and non-substitutable (VRIN) resources, this research argues that these resources alone are insufficient to achieve sustainability outcomes without effective financial mediation. Green financing acts as the enabling mechanism that converts internal capabilities, such as FinTech-driven innovation and green banking practices into tangible sustainability performance. This mediating relationship has not been empirically tested in the Sri Lankan context, highlighting the novelty of this study in integrating RBV with a sustainability-focused financial mechanism.

Based on previous empirical research and the formulated hypothesis, the conceptual framework of the study is outlined as follows:

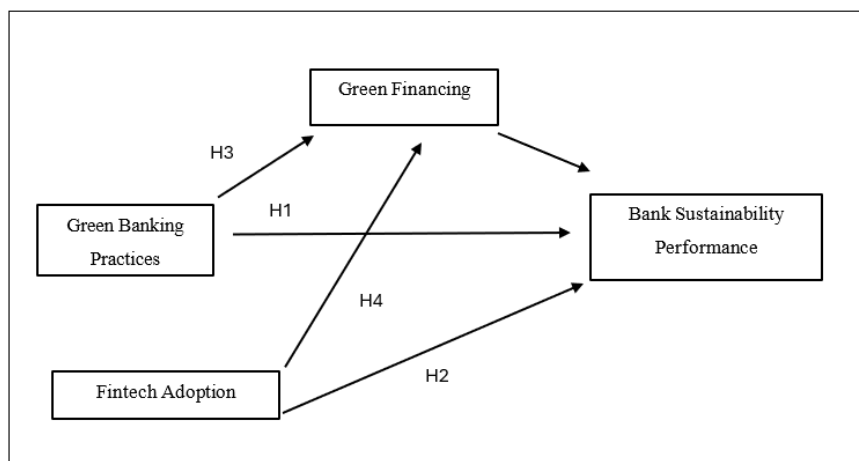


Figure 1: Conceptual Framework (Source; Develop by Author)

3. Methodology

3.1. Research Design

Positivism is a research philosophy that emphasizes factual knowledge derived from quantifiable and observable facts. It is based on the idea that reality exists independently and can be objectively investigated through empirical investigation (Sanders et al., 2019). The data collection methods, which included survey-based methods and five-point Likert scale questions to ensure consistency in responses, improved the reliability of the findings. Additionally, the applied technique of PLS-SEM analysis provides strong insights into the relationships among sustainability performance, green financing, and fintech adoption and green banking practices, as well as empirical support for the correlations between the variables. To gather information over a brief time span, a cross-sectional temporal horizon was employed. Instead of looking at the longer period, it looked at data pertaining to a single movement (Sanders et al., 2019).

3.2. Sample and Data Collection

Therefore, the population for this study was chosen from among managerial-level employees of consistently significant banks. Managerial-level employees were selected because they possess a comprehensive understanding of both operational and strategic

dimensions of banking practices. Their roles typically involve decision-making related to green financing, technology adoption, and sustainability reporting, which are central constructs of this study. Furthermore, managers are directly responsible for implementing FinTech-driven processes and aligning them with environmental and regulatory goals within their institutions. Hence, their insights provide a more accurate and informed reflection of how green banking and FinTech adoption influence sustainability performance at the organizational level.

The stability, interdependence, and financial intermediation of the national economy are all greatly influenced by systemically significant banks (SIBs). Four banks have been designated as SIBs by the Central Bank of Sri Lanka. Systemically important banks include Hatton National Bank (HNB), Commercial Bank of Ceylon PLC, People's Bank, and Bank of Ceylon (BOC) (Banking Act Directions No 10 of 2019.Pdf, n.d.; Domestic Systematically Important Banks, n.d.). The combined workforce of these organizations makes up a sizable percentage of the banking industry's workforce in Sri Lanka. The study consequently concentrated on HNB, a significant private commercial bank, and BOC a prominent state-owned bank. Although four institutions were initially selected as the target population, data collection approval was granted only by Bank of Ceylon (BOC) and Hatton National Bank (HNB) due to internal policy restrictions and confidentiality requirements imposed by the other SIBs. HNB represents the largest private commercial bank in Sri Lanka, while BOC is the leading state-owned bank, allowing the study to capture perspectives from both public and private sectors and ensure balanced representation of the industry's digital and sustainability initiatives. A balanced viewpoint was made possible by this choice. The Morgan Table, a popular method for determining the right sample size for a given population, was created by Krajci and Morgan (1970) to address this issue. There were 250 managerial-level bank workers in the sample. The population for this study consisted of managerial-level employees working in Sri Lanka's four systemically important banks (SIBs), as identified by the CBSL. However, due to data access and confidentiality policies, only two banks, BOC and HNB, granted official permission for participation. Therefore, the study focused on these institutions while maintaining representation from both state-owned and private sectors.

A purposive sampling method was employed to ensure that respondents possessed adequate managerial knowledge and decision-making experience relevant to sustainability, green financing, and FinTech operations. Using the Krejcie and Morgan (1970) sample size determination table, 250 responses were considered sufficient to represent the target population and achieve statistical validity for PLS-SEM analysis. The structured questionnaire used to collect the data was created using knowledge from earlier research (Kumar et al., 2024; Shaumya, 2016). In order to obtain more accurate responses and active involvement, it is necessary to clarify the aim of data collection before beginning any data collection (Kumar et al., 2024). When designing the survey instrument, a variety of items were selected to measure each of the projects under study. Particularly, seven points from Tian et al. (2023) about fintech in the banking sector were changed. The five items used to evaluate green financing and sixteen items used to evaluate green banking practices (Kumar et al., 2024). Lastly, nine items were utilized to measure the bank's sustainability performance using the scale developed by Kumar et al. (2024) and Malsha et al. (2020). To evaluate the survey's content validity, the authors conferred with the heads of sustainability at both banks prior to drafting the questionnaire (Kumar et al., 2024).

3.3. Operationalization of the Study

The operationalization of constructs was based on validated measurement scales adapted from prior empirical studies. Each variable was operationalized through multiple observed indicators measured using a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” Items were slightly modified to fit the Sri Lankan banking context.

3.4. Data Analysis

The study analyzed 250 valid responses collected from management-level employees in two systemically important banks in Sri Lanka. The composition of responses received from both HNB and Boc are 48.4% and 51.6% respectively and when analyzed, major part of responses is given by the employees with more than 5 years of experience in the banking field. Data were examined using the partial least squares

structural equation modelling (PLS-SEM) approach in SmartPLS 4. The measurement model was first assessed to confirm reliability and validity. According to the result, all Factor loading items exceeded the recommended threshold of 0.6, and Cronbach's alpha and composite reliability values for all constructs were above 0.7, ensuring internal consistency (Wang et al., 2023). Average Variance Extracted (AVE) values ranged from 0.511 to 0.613, confirming convergent validity (Wang et al., 2023). Discriminant validity was established using the Heterotrait–Monotrait ratio (HTMT), with all values below the 0.90 threshold (Wang et al., 2023).

Table 1: Average Variance Extracted (AVE)

	AVE	Sample means (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
BSP	0.578	0.578	0.025	23.355	0.000
FA	0.613	0.614	0.025	24.903	0.000
GBP	0.511	0.512	0.021	23.825	0.000
GF	0.585	0.585	0.025	23.252	0.000

Table 2: HTMT Ratio of Correlations

	BSP	FA	GBP	GF
BSP				
FA	0.771			
GBP	0.856	0.698		
GF	0.845	0.717	0.87	

Table 3: Path Coefficients

	Original sample (O)	Sample meaning (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
FA -> BSP	0.298	0.299	0.051	5.851	0.000
FA -> GF	0.246	0.248	0.065	3.771	0.000
GBP -> BSP	0.412	0.411	0.061	6.710	0.000
GBP -> GF	0.587	0.588	0.058	10.074	0.000
GF -> BSP	0.238	0.237	0.065	3.668	0.000

3.5. Structural Model Assessment

To ensure the robustness of the structural model prior to hypothesis testing, collinearity, effect size, and predictive relevance were assessed following the guidelines by Hair et al. (2021).

Collinearity Assessment (VIF): Variance Inflation Factor (VIF) values were examined to detect multicollinearity among the predictor constructs. All inner VIF values were below the conservative threshold of 5.0, indicating the absence of collinearity issues.

Effect Size (f^2): The effect size was calculated to determine the relative impact of each exogenous construct on the endogenous variable. According to Cohen's (1988) criteria, f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively.

Predictive Relevance (Q^2): Using the blindfolding-based cross-validated redundancy approach in SmartPLS, all endogenous constructs yielded positive Q^2 values, confirming that the model has predictive relevance. Values above zero indicate that the model possesses sufficient predictive power for the endogenous constructs.

The structural model assessment showed that the model explained 69.9% of the variance in Bank Sustainability Performance ($R^2 = 0.699$). This indicates substantial explanatory power. When analyzing the relationship of the hypothesis, the results confirmed that all direct and mediated paths were positive and statistically significant (Wang et al., 2023). Green Banking Practices (H1) indicate a significant positive effect on Bank Sustainability Performance ($\beta = 0.552$, $t = 10.731$, $p < 0.001$), suggesting that environmentally sustainable operational initiatives enhance long-term bank performance. According to the result, FinTech Adoption (H2) also showed a significant positive impact on Bank Sustainability Performance ($\beta = 0.356$, $t = 6.795$, $p < 0.001$), indicating that higher adoption of financial technology contributes to improved sustainability outcomes. In terms of mediation, Green Financing significantly mediated the relationship between Green Banking Practices and Bank Sustainability Performance (H3: $\beta = 0.587$, $t = 10.074$, $p < 0.001$). This indicates a partial mediation effect. and the relationship between FinTech Adoption and Bank Sustainability Performance (H4: $\beta = 0.238$, $t = 3.668$, $p < 0.001$) (Wang et al., 2023). These results confirm that Green Financing acts as a partial mediator, strengthening the

positive effects of both FinTech Adoption and Green Banking Practices on Bank Sustainability Performance. This indicates that Green Financing enhances sustainability outcomes; other direct mechanisms of FinTech adoption and green banking initiatives also play an important role.

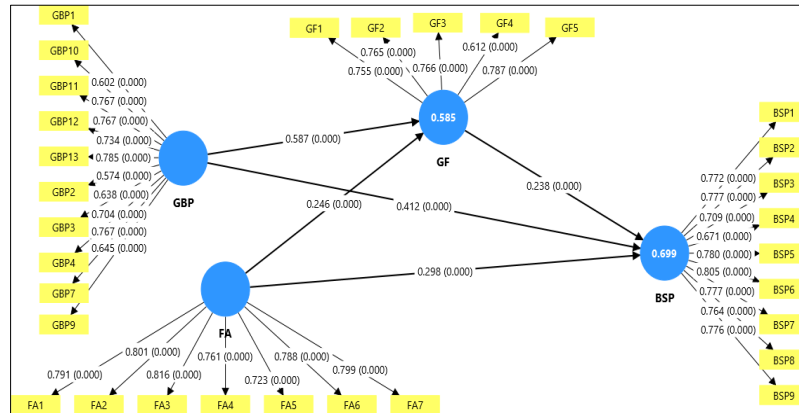


Figure 2: Software Output

3.6. Hypothesis Testing and Bootstrapping Procedure

Hypothesis testing was conducted using the bootstrapping resampling technique in SmartPLS 4 to evaluate the significance of structural relationships. A non-parametric bootstrapping procedure with 5,000 subsamples was performed, as recommended by Hair et al. (2021), to generate bias-corrected and accelerated (BCa) confidence intervals for each path coefficient. The bootstrapping procedure was two-tailed with a significance level of 0.05, which provides a 95% confidence interval for each estimate. The results of the bootstrapping analysis include the original sample (O), sample mean (M), standard deviation (STDEV), t-statistics ($|O/STDEV|$), and p-values, as presented in Table 03. Paths with $p < 0.05$ were considered statistically significant, thereby supporting the corresponding hypotheses (H1–H4).

3.7. Mediation Analysis

To accurately assess the mediating effect of green financing, both direct and indirect paths were examined using the bootstrapping resampling procedure in SmartPLS (5,000 samples, 95% BCa confidence intervals). The indirect effects were calculated as the product of the path coefficients of the independent variable on the mediator and the

mediator on the dependent variable (e.g., $GBP \rightarrow GF \times GF \rightarrow BSP$). A mediation effect is considered significant if the bootstrapped indirect path has a p -value less than 0.05 and its 95% confidence interval does not include zero (Hair et al., 2021).

The results indicate that both green banking practices and FinTech adoption exert significant indirect effects on bank sustainability performance through green financing. Specifically, the indirect path coefficients for $GBP \rightarrow GF \rightarrow BSP$ ($\beta = 0.140, t = 3.12, p < 0.01$) and $FA \rightarrow GF \rightarrow BSP$ ($\beta = 0.059, t = 2.43, p < 0.05$) were statistically significant. Since the direct effects ($GBP \rightarrow BSP, \beta = 0.412, p < 0.001$; $FA \rightarrow BSP, \beta = 0.298, p < 0.001$) remain significant after including the mediator, the mediation is identified as partial mediation.

These findings suggest that green financing acts as a transmission mechanism that strengthens the impact of both green banking and FinTech adoption on sustainability performance, rather than replacing their direct effects.

4. Results and Discussion

The purpose of this study is to investigate the impact of fintech adoption and green banking practices on bank sustainability performance, using green financing as a mediator. It contributes significantly to both academic research and bank operational strategy. From a theoretical view this study expands on the Resource-Based View (RBV) by illustrating how fintech and green banking practices function as valuable, scarce and non-substitutable resources that contribute to bank sustainability performance. According to Barney (1991), a firm's competitive advantage is derived from resources that are VRIN (valuable, rare, unique and non-substitutable). Fintech technologies like AI, digital payments, and blockchain, alongside green banking practices such as paperless systems and eco-friendly infrastructure, help banks improve efficiency, reduce environmental impact, and lead in sustainability (Pizzi et al., 2021; Chueca Vergara et al., 2021). This extension of RBV theory highlights the strategic value of combining technology with environmental resources for long-term advantage. The study also fills a gap in Sri Lankan research on the link between fintech

adoption, green banking, and sustainability (Fernando & Fernando, 2017; Rahman et al., 2024).

This study offers fresh insights into how green financing bridges green banking practices, fintech adoption, and sustainability performance. Green financing, including products like green bonds and sustainable loans, has long been a key part of sustainable finance (Akomea-Frimpong et al., 2022). The research demonstrates how financial institutions can boost sustainability by combining green financing with digital banking solutions. It emphasizes the need to integrate green financing into products, not just adopt green banking practices, as this strengthens fintech's role in achieving sustainability goals (Meng & Shaikh, 2023; Arulraj & Annamalai, 2020). The research fills a gap by offering a comprehensive view of the interaction between fintech and green financing in Sri Lanka, areas previously studied separately (Yan et al., 2022). This study provides key insights for banking managers and decision-makers in Sri Lanka and other emerging markets. It highlights the importance of aligning fintech adoption with green banking practices to boost sustainability. Banks like HNB and BOC have shown that integrating fintech with green banking can improve efficiency, reduce environmental impact, and offer more inclusive services to underserved communities (Tian et al., 2023). Green financing is essential in supporting sustainable projects, and banks should focus on creating green loans and bonds within their fintech offerings to attract socially responsible investors (Dwivedi et al., 2021). The report also emphasizes the need for digital literacy and training to overcome fintech barriers, particularly in rural areas, urging banks to invest in capacity-building initiatives for both staff and customers to maximize the benefits of sustainable fintech solutions (Silva, 2021).

This study has limitations, including a small sample of two major banks in Sri Lanka, which may affect generalizability. Future research should include a wider range of institutions for better external validity (Malsha et al., 2020). The cross-sectional design limits causal analysis, suggesting the need for longitudinal studies. Factors like corporate culture, leadership, and regulatory support should also be explored (Kumar & Prakash, 2018). Future studies could address these factors for a more comprehensive model. Finally, expanding the focus to social and

economic sustainability, along with environmental, could further explore the role of fintech and green financing (Xu et al., 2025).

5. Conclusion and Implications

5.1. Theoretical Implications

This study extends the Resource-Based View (RBV) theory by integrating green financing as a mediating capability that links organizational resources, namely FinTech adoption and green banking practices to sustainability performance. Traditional RBV emphasizes tangible and intangible resources as sources of competitive advantage; however, this study demonstrates that such resources must be channeled through financial mechanisms like green financing to generate measurable sustainability outcomes. By empirically validating this mediating effect in the Sri Lankan banking sector, the study contributes a new theoretical perspective to the literature on sustainable finance and FinTech integration in emerging economies.

5.2. Managerial Implications

From a managerial standpoint, the findings highlight the importance of aligning green banking strategies with digital transformation initiatives. Bank managers should prioritize digital tools such as AI, blockchain, and mobile platforms that enhance both operational efficiency and environmental performance. Moreover, integrating green financing into product portfolios such as offering green bonds, loans, and digital sustainability-linked investment platforms can attract socially responsible investors and improve the institution's sustainability image. Managers are also encouraged to invest in digital literacy and employee training to strengthen the internal capabilities that drive sustainability.

5.3. Policy Implications

At the policy level, the study provides valuable insights for the Central Bank of Sri Lanka (CBSL) and other regulatory authorities. The results underscore the need to strengthen Sri Lanka's Sustainable Finance Roadmap (2019) through clearer guidelines for green credit risk assessment and FinTech-based sustainability reporting. Policymakers

should consider establishing a national green finance framework and standardized disclosure mechanisms (e.g., TCFD-aligned reporting) to incentivize banks' participation in sustainable projects. Encouraging collaboration between financial institutions, technology firms, and government agencies can accelerate the transition toward a green, digitally enabled banking ecosystem in Sri Lanka.

5.4. Conclusion

This study shows that both green banking practices and FinTech implementation make a substantial contribution to the improvement of banks sustainability within Sri Lanka. It highlights how green banking measures such as environmentally conscious operations and green loans can significantly improve long-term sustainability outcomes of financial institutions. At the same time the use of FinTech includes technology such as digital payments, blockchain and AI which improve operational efficiency and ultimately boost sustainability. These findings lend support to the Resource-Based View (RBV) theory which holds that digital and green resources are valuable, unique, rare and non-substitutable assets that give banks a competitive advantage in a continuously changing financial sector. Further the research pinpoints the vital mediating role of green financing in manipulating the positive impacts of both green banking and FinTech on sustainability performance. By incorporating green financing into their offering's banks can attract socially responsible investors and contribute to global sustainability effort by enhancing their overall performance. This research provides insightful advice for academics and banking professionals particularly in Sri Lanka and other developing countries. It highlights how important it is to integrate FinTech, green financing and green banking practices to support the sustainable growth of banking sector. Future research should broaden the scope to include a greater variety of financial institutions and consider additional factors including corporate culture and regulatory frameworks to develop a more comprehensive model for sustainable banking.

References

Akomea-Frimpong, I., Adeabah, D., Ofori, D., & Tenakwah, E. J. (2021). A Review of Studies on Green Finance of banks, *Journal of*

- sustainable Finance & Investment*, 12(4), 1–24. <https://www.tandfonline.com/doi/abs/10.1080/20430795.2020.1870202>
- Arulraj, D. J., & Annamalai, T. R. (2020). Firms' Financing Choices and Firm Productivity: Evidence from an Emerging Economy. *International Journal of Global Business and Competitiveness*, 15(1), 35–48. <https://doi.org/10.1007/s42943-020-00008-2>
- Banking_Act_Directions_No_10_of_2019.pdf. (2019). https://www.cbsl.gov.lk/Sites/Default/Files/Cbslweb_documents/Laws/Cdg/Banking_Act_Directions_No_10_Of_2019.Pdf.
- Chueca Vergara, C., & Ferruz Agudo, L. (2021). Fintech and Sustainability: Do They Affect Each Other? *Sustainability*, 13(13), 7012. <https://doi.org/10.3390/su13137012>
- Dwivedi, P., Alabdooli, J. I., & Dwivedi, R. (2021). Role of fintech adoption for competitiveness and performance of the bank. <https://doi.org/10.1007/s42943-021-00033-9>
- Ellili, N. O. D. (2022). Is there any association between FinTech and sustainability? Evidence from bibliometric review and content analysis. *Journal of Financial Services Marketing*. <https://doi.org/10.1057/s41264-022-00200-w>
- Fatica, S., Panzica, R., & Rancan, M. (2021). The pricing of green bonds: Are financial institutions special? *Journal of Financial Stability*, 54(100873), 100873. <https://doi.org/10.1016/j.jfs.2021.100873>
- Fernando, P. M. P., & Fernando, K. S. D. (2017). *Study of Green Banking Practices in the Sri Lankan Context: A Critical Review*. In *Selected Papers from the Asia-Pacific Conference on Economics & Finance (APEF 2016)* (pp. 125–143).
- GLOBAL SUSTAINABLE INVESTMENT REVIEW. (2022). <https://www.gsi-alliance.org/wp-content/uploads/2023/12/GSIA-Report-2022.pdf>
- GREEN FINANCE FOR SRI LANKAN FINANCIAL INSTITUTIONS. (n.d.). https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/green_finance_brochure.pdf
- Gialetta, E., & Chesini, G. (2021). The determinants of debt financing: The case of fintech start-ups. *Journal of Innovation & Knowledge*, 6(4). sciencedirect. <https://doi.org/10.1016/j.jik.2021.10.001>

- HATTON NATIONAL BANK PLC. (N.D.). Retrieved August 13, 2025, from https://assets.hnb.lk/atdi/docs/pdfs/annual_reports/2023/integrated-report-2023.pdf
- Hadi, M. R. (2023). *Green Banking: A Literature Review on Profitability and Sustainability Implications*. *Ishtar Journal of Economics and Business Studies*, 4(2), 1–6. <https://doi.org/10.55270/ijeb.v4i2.27>
- Jafari, M., & Rezaee, F. (2014). The Effect of Resource Based View on Sustainable Capability Advantage. *Management Science Letters*, 4(12), 2537–2554. <https://doi.org/10.5267/j.msl.2014.11.002>
- Khushbu, K. (2024). “Exploring the Relationship between Green Banking Practices and Customer Loyalty.” *Educational Administration: Theory and Practice*, 80–86. <https://doi.org/10.53555/kuey.v30i11.8357>
- Kumar, K., & Prakash, A. (2018). Developing a framework for assessing sustainable banking performance of the Indian banking sector. *Social Responsibility Journal*, 15(5). <https://doi.org/10.1108/srj-07-2018-0162>
- Kumar, J., Rani, G., Rani, M., & Rani, V. (2024). Do green banking practices improve the sustainability performance of banking institutions? The mediating role of green finance. *Social Responsibility Journal*. <https://doi.org/10.1108/srj-02-2024-0096>
- Lebbe, A., Shameem, M. A., & Haleem, A. (2021). A Study on Green Banking Practices in Banking Industry: Sri Lankan Context. *The Journal of Contemporary Issues in Business and Government*, 27(1), 490–505. <https://cibgp.com/index.php/1323-6903/article/view/581>
- Lubis, N. W. (2022). *Resource-Based View (RBV) in Improving Company Strategic Capacity*. *Research Horizon*, 2(6), 587–596.
- Malsha, K. P. P. H. G. N., Arulrajah, A. A., & Senthilnathan, S. (2020). Mediating role of employee green behaviour towards sustainability performance of banks. *Journal of Governance and Regulation*, 9(2), 92–102. <https://doi.org/10.22495/jgrv9i2art7>
- Malcolm, B., Bergstresser, D., Serafeim, G., & Wurgler, J. (2022). The Pricing and Ownership of US Green Bonds. *Annual Review of Financial Economics*, 14(1). <https://doi.org/10.1146/annurev-financial-111620-014802>

- Manjala, D. M. (2014). The Challenges of Creating Sustainable Competitive Advantage in the Banking Industry in Kenya. *IOSR Journal of Business and Management*, 16(4), 82–87. <https://doi.org/10.9790/487x-16418287>
- M. Migliorelli & P. Dessertine (Eds.) The Rise of Green Finance in Europe. (2019)., *Palgrave Studies in Impact Finance*. Springer International Publishing. <https://doi.org/10.1007/978-3-030-22510-0>
- Meng, X., & Shaikh, G. M. (2023). Evaluating Environmental, Social, and Governance Criteria and Green Finance Investment Strategies Using Fuzzy AHP and Fuzzy WASPAS. *Sustainability*, 15(8), 6786. <https://doi.org/10.3390/su15086786>
- Muganyi, T., Yan, L., Yin, Y., Sun, H., Gong, X., & Taghizadeh-Hesary, F. (2022). Fintech, regtech, and financial development: evidence from China. *Financial Innovation*, 8(1). <https://doi.org/10.1186/s40854-021-00313-6>
- Niyazbekova, S., Jazykbayeva, B., Mottaeva, A., Belousova, E., Suleimenova, B., & Zueva, A. (2021). The Growth of “Green” finance at the global level in the context of sustainable economic development. *E3S Web of Conferences*, 244, 10058. <https://doi.org/10.1051/e3sconf/202124410058>
- Oyetade, D., Obalade, A. A., & Muzindutsi, P.-F. (2021). Basel IV capital requirements and the performance of commercial banks in Africa. *Journal of Banking Regulation*. <https://doi.org/10.1057/s41261-021-00181-1>
- Pizzi, S., Corbo, L., & Caputo, A. (2020). Fintech and SMEs sustainable business models: Reflections and considerations for a circular economy. *Journal of Cleaner Production*, 281, 125217. <https://doi.org/10.1016/j.jclepro.2020.125217>
- Rahman, Iqbal Hossain Moral, Md. Abdul Kaium, Gertrude Arpa Sarker, Israt Zahan, Gazi, & Mannan, A. (2024). FinTech in sustainable banking: An integrated systematic literature review and future research agenda with a TCCM framework. *Green Finance*, 6(1), 92–116. <https://doi.org/10.3934/gf.2024005>
- Sajuyigbe, A. S., Tella, A. R., Obi, J. N., Sanusi, B. M., Adeyemi, M. A., & Ayo-oyebiyi, G. (2025). Leveraging Green Finance to Improve SME Sustainability in Nigeria. *Dynamics in Social Sciences and Humanities*, 5(2), 36–45. <https://doi.org/10.62425/dssh.1518431>

- Sanders, N. K., Lewis, P., & Thornhill, A. (2019). *Saunders, Research Methods for Business Students, 8/E*.
<https://www.pearson.com/content/one-dot-com/one-dot-com/se/en/Nordics-Higher-Education/subjectcatalogue/business-and-management/Research-methods-for-business-students-8e-saunders.html>
- Shaumya, K., & Arulrajah, A. (2016, December 8). *Measuring Green Banking Practices: Evidence from Sri Lanka*. Papers.ssrn.com.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2909735
- Siddik, A. B., Yong, L., & Rahman, M. N. (2023). The role of Fintech in circular economy practices to improve sustainability performance: a two-staged SEM-ANN approach. <https://doi.org/10.1007/s11356-023-25576-7>
- Silva S, D. K. (2021). *Factors Affecting the Customers' Intention to Use Green Banking Products in Sri Lanka*.
- SLJBSF, V.-I.-I.-2.-A.-0. (n.d.). *Factors Affecting the Customers' Intention to Use Green Banking Products in Sri Lanka*.
<https://fbsf.wyb.ac.lk/wp-content/uploads/2022/10/SLJBSF-Volume-I-Issue-2-Article-02-Factors-Affecting-the-Customers-Intention-to-Use-Green-Banking.pdf>
- Soni, G., Kumar, S., Mahto, R. V., Mangla, S. K., Mittal, M. L., & Lim, W. M. (2022). A decision-making framework for Industry 4.0 technology implementation. <https://doi.org/10.1016/j.techfore.2022.121686>
- Sri_lanka_sustainable_finance_roadmap. (2019).
https://www.cbsl.gov.lk/Sites/Default/Files/Cbslweb_documents/Sri_lanka_sustainable_finance_roadmap_2019.Pdf
- Tian, H., Siddik, A. B., Pertheban, T. R., & Rahman, M. N. (2023). Does fintech innovation and green transformational leadership improve green innovation and corporate environmental performance? A hybrid SEM-ANN approach. *Journal of Innovation & Knowledge*, 8(3), 100396. <https://doi.org/10.1016/j.jik.2023.100396>
- Wang, W., Fatt Hee Tie, Intan Marfarrina Omar, Chen, W., Li, P. J., & Shi, C. (2023). An Empirical Study on the Creative Learning Environment Fostering Student Creativity: A Multiple Mediation Analysis Using Smart PLS 4. *Journal of Educational and Social*

Research, 13(4), 10–10. <https://doi.org/10.36941/jesr-2023-0085>

- Xu, F. Y., & Sagarra, M. (2025). The impact of FinTech on bank performance: A systematic literature review. *Digital Business*, 5(2), 100131. <https://doi.org/10.1016/j.digbus.2025.100131>.
- Yan, C., Siddik, A. B., Yong, L., Dong, Q., Zheng, G.-W., & Rahman, M. N. (2022). A Two-Staged SEM-Artificial Neural Network Approach to Analyze the Impact of FinTech Adoption on the Sustainability Performance of Banking Firms: The Mediating Effect of Green Finance and Innovation. *Systems*, 10(5), 148. <https://doi.org/10.3390/systems10050148>