VILNIUS GEDIMINAS TECHNICAL UNIVERSITY

Nour NASSAR

SUSTAINABLE MANAGEMENT FOR GREEN COMPETITIVENESS IN THE BANKING SECTOR

DOCTORAL DISSERTATION

SOCIAL SCIENCES
MANAGEMENT (S 003)

Vilnius, 2025

The doctoral dissertation was prepared at Vilnius Gediminas Technical University in 2018–2025.

Supervisor

Prof. Dr Manuela TVARONAVIČIENĖ (Vilnius Gediminas Technical University, Management – S 003).

The Dissertation Defense Council of the Scientific Field of Management of Vilnius Gediminas Technical University:

Chairperson

Prof. Dr Ilona SKAČKAUSKIENĖ (Vilnius Gediminas Technical University, Management – S 003).

Members:

Assoc. Prof. Dr Jurgita BRUNECKIENĖ (Kaunas University of Technology, Economics – S 004),

Assoc. Prof. Dr Mihail BUSU (Bucharest University of Economic Studies, Romania, Management – S 003),

Prof. Dr Aldona JARAŠŪNIENĖ (Vilnius Gediminas Technical University, Management – S 003),

Assoc. Prof. Dr Alma MAČIULYTĖ-ŠNIUKIENĖ (Vilnius Gediminas Technical University, Management – S 003).

The dissertation will be defended at the public meeting of the Dissertation Defense Council of the Scientific Field of Management in the *Aula Doctoralis* Meeting Hall of Vilnius Gediminas Technical University at **9 a.m. on 13 June 2025**.

Address: Saulėtekio al. 11, LT-10223 Vilnius, Lithuania.
Tel.: +370 5 274 4956; fax +370 5 270 0112; e-mail: doktor@vilniustech.lt

A notification on the intended defence of the dissertation was sent on 12 May 2025. A copy of the doctoral dissertation is available for review at the Vilnius Gediminas Technical University repository https://etalpykla.vilniustech.lt/ and the Library of Vilnius Gediminas Technical University (Saulėtekio al. 14, LT-10223 Vilnius, Lithuania).

Vilnius Gediminas Technical University book No 2025-036-M

https://doi.org/10.20334/2025-036-M

nour.nassar@vilniustech.lt

VILNIAUS GEDIMINO TECHNIKOS UNIVERSITETAS

Nour NASSAR

TVARIOJO VALDYMO TAIKYMAS SIEKIANT ŽALIOJO KONKURENCINGUMO BANKININKYSTĖS SEKTORIUJE

DAKTARO DISERTACIJA

SOCIALINIAI MOKSLAI,
VADYBA (S 003)

Vilnius, 2025

Disertacija rengta 2018–2025 metais Vilniaus Gedimino technikos universitete.

Vadovas

prof. dr. Manuela TVARONAVIČIENĖ (Vilniaus Gedimino technikos universitetas, Vadyba – S 003).

Vilniaus Gedimino technikos universiteto Vadybos mokslo krypties disertacijos gynimo taryba:

Pirmininkė

prof. dr. Ilona SKAČKAUSKIENĖ (Vilniaus Gedimino technikos universitetas, Vadyba – S 003).

Nariai:

doc. dr. Jurgita BRUNECKIENĖ (Kauno technologijos universitetas, Ekonomika – S 004),

doc. dr. Mihail BUSU (Bukarešto ekonomikos universitetas, Rumunija, Vadyba – S 003),

prof. dr. Aldona JARAŠŪNIENĖ (Vilniaus Gedimino technikos universitetas, Vadyba – S 003),

doc. dr. Alma MAČIULYTĖ-ŠNIUKIENĖ (Vilniaus Gedimino technikos universitetas, Vadyba – S 003).

Disertacija bus ginama viešame Vadybos mokslo krypties disertacijos gynimo tarybos posėdyje **2025 m. birželio 13 d. 9 val.** Vilniaus Gedimino technikos universiteto *Aula Doctoralis* posėdžių salėje.

Adresas: Saulėtekio al. 11, LT-10223 Vilnius, Lietuva.
Tel.: (0 5) 274 4956; faksas (0 5) 270 0112; el. paštas *doktor@vilniustech.lt*

Pranešimai apie numatomą ginti disertaciją išsiusti 2025 m. gegužės 12 d.

Disertaciją galima peržiūrėti Vilniaus Gedimino technikos universiteto talpykloje https://etalpykla.vilniustech.lt/ ir Vilniaus Gedimino technikos universiteto bibliotekoje (Saulėtekio al. 14, LT-10223 Vilnius, Lietuva).

Abstract

Despite the increasing pressure for sustainability in the banking sector, there is limited understanding of how sustainable management practices influence stakeholder decision-making and enhance banks' green competitiveness, particularly in emerging markets. Existing research focuses on operational aspects but lacks a comprehensive analysis of stakeholder impact and competitive advantage (Galletta et al., 2024; Kumar & Prakash, 2020; Bilan et al., 2019; Drago et al., 2024). The dissertation aims to develop a comprehensive model for assessing the implementation of sustainable management practices in the banking sector and measuring their specific implications for decision-making among internal and external stakeholders. Utilizing an integrated methodological approach that combines Structural Equation Modeling (SEM) and Multi-Criteria Decision Making (MCDM) through the Analytic Hierarchy Process (AHP), this research develops a comprehensive model to measure and enhance sustainable management. The dissertation reveals that green products and environmental management practices significantly influence stakeholder decision-making, contributing to competitive advantages in the banking sector. Empirical data analysis results have demonstrated that internal stakeholders, such as employees and the board of directors, prioritize green products, while external stakeholders, including individual clients and SMEs, emphasize environmental management. The research extends the resource-based view (RBV) and stakeholder theory, providing nuanced insights into sustainability dynamics within banking institutions. By offering practical recommendations, the dissertation guides banks in developing targeted sustainability strategies that align with stakeholders' expectations, ultimately fostering long-term competitiveness and environmental sustainability. The scientific novelty of this research lies in developing and validating a tool for prioritizing sustainable management practices in banking, integrating various management theories with a strong focus on a stakeholder-centric approach. Additionally, the findings highlight that internal stakeholders have a more significant impact on decision-making processes than external stakeholders. The research contributes to the theoretical discourse on sustainable management and provides actionable insights for policymakers and banking professionals. The dissertation is foundational for advancing sustainable management practices in the banking sector, especially in emerging markets like Lebanon.

Reziumė

Bankininkystės sektorius patiria augantį spaudimą užtikrinti veiklos tvarumą, tačiau pastebėta, jog trūksta supratimo apie tai, koks yra tvariojo valdymo praktikų poveikis suinteresuotųjų šalių sprendimams ir bankų žaliojo konkurencingumo lygiui. Ypač šių žinių trūksta besiformuojančiose rinkose. Moksliniuose tyrimuose daugiausia dėmesio yra skiriama operacinio lygio aspektams (Galletta et al., 2024; Kumar & Prakash, 2020; Bilan et al., 2019; Drago et al., 2024). Trūksta kompleksinės analizės, kuri apimtų suinteresuotųjų šalių įtaką ir konkurencinius pranašumus. Disertacinio darbo tikslas yra sukurti visapusišką modelį, skirtą įvertinti, kaip tvariojo valdymo praktikos taikomos bankininkystės sektoriuje, ir išmatuoti jų daromą poveikį vidinių bei išorinių suinteresuotųjų šalių sprendimams. Tyrimo rezultatai leido sukurti kompleksinį modelį, orientuotą į tvariojo valdymo vertinimą bei stiprinimą, pasitelkiant integruotą metodiką, apimančią struktūrinių lygčių modeliavimą (angl. *Structural Equation Modeling*, sutr. SEM) ir daugiakriterį sprendimų priėmimą (angl. *Multi-Criteria Decision Analysis*, sutr. MCDA) taikant analitinės hierarchijos proceso metodą (angl. *Analytic Hierarchy Process*, sutr. AHP). Atlikto tyrimo rezultatai leido nustatyti, kad suinteresuotosioms šalims priimant sprendimus reikšmingą poveikį turi "žalieji produktai" ir aplinkosaugos valdymo praktikos, tokiu būdu prisidėdamos prie konkurencinio pranašumo įgijimo bankininkystės sektoriuje. Empirinių duomenų analizės rezultatai parodė, kad vidiniai suinteresuotieji asmenys, tokie kaip darbuotojai ir valdybos nariai, teikia pirmenybę "žaliesiems produktams", o išoriniams suinteresuotiesiems asmenims, įskaitant individualius klientus ir mažas bei vidutines įmones (MVĮ), svarbesnis yra aplinkosaugos valdymas. Tyrimas praplečia išteklių teorijos (RBV) ir suinteresuotųjų šalių teorijų taikymą, pateikdamas subtilias įžvalgas apie tvarumo dinamiką bankų institucijose. Disertacijoje yra pateikiamos praktinės rekomendacijos, kurios padės bankams kurti tikslines tvarumo strategijas, atitinkančias suinteresuotųjų šalių lūkesčius, tokiu būdu ilgainiui bus skatinamas ilgalaikis konkurencingumas ir aplinkosauginis tvarumas. Sukurtas ir patikrintas mokslo požiūriu naujas modelis, skirtas nustatyti tvariojo valdymo praktikų bankų sektoriuje prioritetus, papildant įvairias valdymo teorijas ir ypatingą dėmesį skiriant suinteresuotųjų šalių poreikiams rodo disertacinio darbo tyrimų mokslinį naujumą. Atlikto tyrimo rezultatai rodo, kad vidiniai suinteresuotieji asmenys daro didesnį poveikį sprendimų priėmimo procesams nei išoriniai suinteresuotieji asmenys. Tyrimo rezultatai suteikia galimybę papildyti teorines diskusijas apie tvarųjį valdymą ir pateikti praktinių įžvalgų, kurios yra naudingos politikos formuotojams bei bankų sektoriaus specialistams. Disertacija sudaro pagrindą tobulinti tvariojo valdymo praktikas bankų sektoriuje ir ypač besiformuojančiose rinkose, pavyzdžiui, Libane.

Notations

Abbreviations

AHP – analytic hierarchy process (liet. *analitinis hierarchijos procesas*);
CCT – corporate citizenship theory (liet. *įmonių pilietiškumo teorija*);
CS – corporate sustainability (liet. *įmonių tvarumas*);
CSR – corporate social responsibility (liet. *įmonių socialinė atsakomybė*);
DM – decision-making (liet. *sprendimų priėmimas*);
DC – dynamic capabilities (liet. *dinaminiai gebėjimai*);
ESG – environmental, social, and governance goals (liet. *aplinkosaugos, socialinės atsakomybės ir valdysenos tikslai*);
GDPT – green decision-making prioritization tool (liet. *žaliųjų sprendimų priėmimo prioritetų nustatymo įrankis*);
GM – green management (liet. *aplinkosauginis valdymas*);
GRI – global reporting initiative (liet. *Pasaulinė atskaitomybės iniciatyva*);
HRM – human resources management (liet. *žmogiškųjų išteklių valdymas*);
ICT – information and communications technology (liet. *informacinės ir ryšių technologijos*);
KPI – key performance indicator (liet. *pagrindinis veiklos rodiklis*);
MCDM – multi-criteria decision-making (liet. *daugiakriteris sprendimų priėmimas*);
PRISMA-SCR – preferred reporting items for systematic reviews and meta-analyses for scoping reviews (liet. *Pageidaujami ataskaitos elementai sisteminėms apžvalgoms ir metaanalizėms, taikomi apžvalginiams tyrimams*);

R&D – research and development (liet. *moksliniai tyrimai ir eksperimentinė plėtra*);
SEM – structural equation modeling (liet. *struktūrinių lygčių modeliavimas*);
SLL – sustainability-linked loan (liet. *su tvarumu susieta paskola*);
SMPs – sustainable management practices (liet. *Tvariojo valdymo praktikos*);
SSCM – sustainable supply chain management (liet. *tvarus tiekimo grandinės valdymas*).

Contents

Introduction

Problem Formulation

The banking sector is increasingly pressured to adopt sustainable management practices due to evolving regulatory expectations, consumer demand for ethical conduct, and global sustainability agendas, such as the SDGs and the Paris Agreement (Leheza et al., 2021; Drago et al., 2024; Ashrafi et al., 2020; Ritzel et al., 2020). As financial intermediaries, banks play a pivotal role in financing eco-friendly sectors and influencing corporate sustainability behavior. However, despite growing attention to sustainability, a critical research gap persists in understanding how these practices influence stakeholder decision-making and competitive positioning (Bilan et al., 2019; Yadav et al., 2024). Existing studies focus heavily on operational aspects – green products, CSR, or environmental management systems – without integrating them into a broader, stakeholder-aligned strategy (Galletta et al., 2024; Kumar & Prakash, 2020; Pu et al., 2024; Castagna et al., 2020). Furthermore, most literature centers on developed markets, offering little insight into emerging economies like Lebanon, where resource and regulatory constraints add complexity (Rahman et al., 2023; Farhan et al., 2024). The research argues that stakeholder engagement must be central to sustainable banking. Without a structured model reflecting stakeholder priorities, banks risk strategic misalignment, inefficiencies, and loss of competitive advantage (Freeman, 1984;

Drago et al., 2024). The conducted research research frames sustainability as a strategic, dynamic process and introduces a stakeholder-focused model suited to various market contexts (Chaudhuri et al., 2022; Kumar & Prakash, 2020).

Relevance of the Dissertation

Sustainable management practices in banking have been widely studied for their operational benefits, such as cost savings, reduced environmental impact, and enhanced reputation. As banking institutions face increasing risks from climate change, regulatory shifts, and consumer demand for responsible banking, sustainability has become a critical factor in long-term resilience and competitive differentiation. However, these studies often examine such practices in isolation, lacking a cohesive framework that aligns sustainability with stakeholder priorities and long-term competitiveness. Makarchenko et al. (2016) and Nevárez and Féliz (2019) discuss cost-saving measures, while Song et al. (2019) and Kokkonen and Ojanen (2018) emphasize stakeholder engagement, yet without fully integrating these aspects into a unified strategy. The relevance of this research is heightened by global sustainability requirements, such as the United Nations Sustainable Development Goals (SDGs), ESG regulations, and green finance initiatives, which are reshaping the banking sector. Banks support SDGs 8, 9, 10, 12, 13, and 17 by promoting financial inclusion, funding sustainable projects, and adopting green finance strategies. ESG-driven models boost banking competitiveness (Galletta et al., 2024; Agnese et al., 2024), though emerging markets face constraints (Rahman et al., 2023; Kumar & Prakash, 2020). This research offers a theory-based, context-sensitive framework linking sustainability to decision-making and long-term profitability.

Research Object

The research object is sustainable management practices and their role in shaping green competitiveness and stakeholder decision-making in the banking sector.

Aim of the Dissertation

The dissertation aims to develop and validate a comprehensive model for evaluating sustainable management practices in the banking sector, focusing on their impact on stakeholder decision-making and green competitiveness.

Tasks of the Dissertation

The dissertation addresses the following tasks to achieve the aim of the dissertation:

1. To review the existing literature on sustainable management and green competitiveness in the banking sector to identify research gaps and critical sustainable management practices that influence decision-making and competitiveness and to develop a theoretical framework that establishes conceptual foundations while integrating hypothetical elements for validation.
2. To evaluate the relationships between sustainable management practices and stakeholder decision-making in the banking sector using quantitative research methods, selecting specific methods based on their alignment with the research objectives and requirements.
3. To test and validate the developed model through empirical research and case studies method, providing practical recommendations for banks to improve their sustainability strategies and competitive positioning.

Research Methodology

The dissertation adopts a positivist philosophical orientation (Susan Rose & Nigel Spinks, 2024), grounded in objectivist epistemology and realist ontology. A deductive research approach is employed to extend and test established management theories, namely the stakeholder theory (Freeman, 1984), the resource-based view (Barney, 1991), the institutional theory (DiMaggio & Powell, 1983), and the dynamic capabilities theory (Teece et al., 1997), within the context of the Lebanese banking sector. The first chapter presents the theoretical framework for sustainable management and green competitiveness, supported by a structured literature review and comparative analysis (Bilan et al., 2019; Kumar & Prakash, 2020). The Second Chapter outlines the empirical methodology. A conceptual model was developed, and hypotheses were constructed based on theoretical insights (Drago et al., 2024; Yadav et al., 2024). Data were collected using a structured questionnaire targeting internal and external stakeholders. Quantitative methods were employed, using SEM to assess theoretical relationships and MCDM via the Analytic Hierarchy Process (AHP) to prioritize sustainable management practices based on stakeholder inputs. In alignment with the positivist paradigm, qualitative elements were used in a strictly subordinate role to support the interpretation of quantitative results. The Third Chapter presents the validation and refinement of the model,

confirming the influence of stakeholder-driven sustainability on green competitiveness. The adopted methodology ensures empirical robustness and supports generalization across emerging banking environments.

Scientific Novelty of the Dissertation

First, the integrated theoretical framework for strategic sustainability: the dissertation presents a novel decision-making model that integrates stakeholder theory, the RBV, and DC theory into a unified framework. This integration allows banks to link sustainability directly with competitive strategy, transforming green initiatives from compliance tools into proactive drivers of long-term financial and environmental performance. Second, the quantifiable stakeholder prioritization model: the research extends stakeholder theory by introducing a structured, data-driven method for evaluating stakeholder-specific sustainability priorities. It moves beyond traditional models by differentiating internal and external stakeholder influence and offering a quantifiable basis for aligning sustainability strategies with stakeholder expectations. Third, sustainability as an operationalized strategic resource: by demonstrating how internal stakeholders, particularly employees and leadership, drive sustainable practices, the research enhances RBV and DC theories. It establishes sustainability as a tangible, adaptable resource that strengthens green competitiveness and supports continuous innovation, especially in resource-constrained banking environments. Fourth, the empirically validated model for market-specific application: the dissertation bridges theory and practice by applying the model in the Lebanese banking sector and demonstrating its broader applicability. Empirical validation is used to provide banks with a replicable framework for integrating sustainability into decision-making while adapting to regulatory, institutional, and stakeholder dynamics in both emerging and developed markets.

Practical Value of the Research Findings

The practical contributions presented here strengthen sustainable banking practices. First, the structured and adaptable sustainability decision-making model: the dissertation offers financial institutions a structured, data-driven model for integrating sustainability into core strategic and operational decisions. The model enables banks to align sustainability initiatives with business goals, regulatory requirements, and competitive positioning. Its adaptability across both emerging and developed banking environments makes it a practical decision-support tool

for diverse institutional contexts. Second, the stakeholder-based sustainability prioritization tool: the research delivers a practical mechanism for banks to assess and rank stakeholder sustainability expectations. By differentiating the influence of internal and external stakeholder groups, the tool allows for the design of targeted sustainability strategies that increase relevance, trust, and long-term engagement. This includes applications such as green products for retail clients, ESG-linked instruments for corporate clients, and staff-driven sustainability initiatives. Third, the strategic resource allocation for competitive sustainability: the model enables banks to treat sustainability as a strategic resource by linking stakeholder input to financial feasibility and environmental impact. This allows institutions to allocate resources toward sustainability initiatives that provide the highest return in terms of risk mitigation, innovation, and competitive positioning, particularly in markets with limited capacity or volatile regulatory conditions. Fourth, the application in emerging market contexts with global transferability: through its empirical application in the Lebanese banking sector, the model proves effective in addressing market-specific challenges, such as regulatory uncertainty, limited resources, and fragmented stakeholder engagement. At the same time, its structured and quantifiable design allows for transferability to developed markets, offering banks a replicable methodology for aligning sustainability with long-term business strategy in varied institutional settings.

Defended Statements

The dissertation defends the following statements:

1. Sustainable management practices positively influence bank stakeholders' decision-making and enhance green competitiveness in the banking sector.
2. A stakeholder-centric approach to sustainable management enables banks to develop targeted management strategies that enhance sustainability performance and competitive advantage.
3. Green Product Management (GPM) and Environmental Management (EMG) are critical factors driving bank stakeholders' green decision-making.
4. Integrating SEM and MCDM-AHP methods provides a robust framework for evaluating and prioritizing sustainability criteria in the banking sector.

Approval of the Research Findings

The dissertation is supported by five published articles that explore sustainable management and green competitiveness in the banking sector. Three articles have been published in journals indexed in international scientific databases such as *Scopus*, and two have been included in conference proceedings. In addition, presentations of the research findings were given at eight international conferences and scientific seminars, three in Lithuania and five abroad:

- International Conference *Smithy of Ideas 2019*, Lithuanian Society of Young Researchers, Kelme, Lithuania, 2019.
- International Conference *Scientific Conference on Economics and Entrepreneurship (SCEE'2019)*, Riga Technical University, Latvia, 2019.
- International Conference *14th International Scientific Conference of Faculty of Social Sciences*, Daugavpils University, Latvia, 2021.
- International Conference *Contemporary Issues in Business, Management, and Economics Engineering*, VILNIUS TECH University, Lithuania, 2021.
- International Conference *1st International Scientific and Practical Internet Conference*, Dnipro, Ukraine, 2021.
- Scientific Seminar at the American University of Culture and Education (AUCE), Tyr Campus, Lebanon, 2023.
- International Conference *Middle East International Conference on Contemporary Scientific Studies-VIII*, IKSAD Institute, Adana, Türkiye, 2023.
- International Conference *Business and Management 2023*, Vilnius Gediminas Technical University, Lithuania, 2023.

  Scientific Seminar at the Institute of Humanities and Social Sciences, Daugavpils University, Latvia, 2024.

Structure of the Dissertation

The dissertation has the following sections: an introduction, three chapters (First Chapter: Literature Review; Second Chapter: Research; Third Chapter: Proposed Model), general conclusions, references, a list of publications and presentations by the author on the topic of the dissertation, a summary in Lithuanian, and annexes. The total scope of the doctoral dissertation is 177 pages, excluding the annexes. It contains 144 references, 10 numbered formulas, 25 tables, and 8 figures.

1

Literature Review on Sustainable Management for Green Competitiveness of Internationalization

This chapter explores the essential aspects of sustainable management, focusing on green competitiveness within banking institutions. The primary objective is to investigate how banks can incorporate environmental considerations into their business strategies to gain a competitive edge.

The chapter begins by emphasizing the growing importance of green competitiveness and the need for further research. It examines the convergence of sustainable management with competitive business practices, highlighting various strategies to promote green competition. The global commitment to sustainable development underscores the urgency to adopt environmentally sustainable management strategies.

This chapter also reviews fundamental sustainability theories and frameworks relevant to green competitiveness, integrating perspectives from the competitiveness and sustainability domains. This integration aims to develop management theories that address contemporary environmental challenges.

This chapter sets the stage for the practical application of sustainable management practices in the banking sector, emphasizing their role in enhancing green competitiveness.

In summary, the First Chapter examines how businesses can balance sustainability with competitiveness in the context of global initiatives like the UN's Sustainable Development Goals. The concept of "sustainable management and green competition" is analyzed to understand its implications and impact on a company's success. Two publications were published by the author on the topic of this chapter (Tvaronavičienė & Nassar, 2021a; Nassar & Tvaronavičienė, 2019).

1.1. Definition of Green Competitiveness and Sustainable Management in the Banking Sector

As global challenges, such as climate change, resource scarcity, and environmental degradation, intensified the concepts of green competitiveness and sustainable management have emerged as critical drivers of business success. These frameworks are particularly vital in the banking sector, where aligning environmental sustainability with economic objectives can create long-term value and market resilience. Green competitiveness emphasizes leveraging environmentally friendly practices as a strategic advantage, integrating innovation and sustainability into core business operations. Meanwhile, sustainable management takes a holistic approach, focusing on balancing environmental, social, and economic goals within an organization. Together, these concepts enable businesses to address stakeholder expectations, enhance operational efficiency, and contribute to global sustainability efforts. Figure 1.1 illustrates the definition flow for green competitiveness and sustainable management by categorizing them into three main dimensions: general definitions, sector-specific definitions, and systematic definitions. This framework helps conceptualize the role of sustainable management in enhancing green competitiveness within the banking sector, providing a structured approach to integrating economic, social, and environmental sustainability into banking operations.

These dimensions include:

General Definitions, exploring foundational concepts and global frameworks.

Sector-specific definitions focus on the unique applications within the banking sector.

Systematic Definitions addressing the balance of environmental, social, and economic objectives.

Understanding these interconnected dimensions highlights their pivotal role in shaping the future of sustainable banking and fostering a competitive edge in an evolving market.

Fig. 1.1. Definition flow for green competitiveness and sustainable management (created by the author)

First, *the general definitions of green competitiveness and sustainable management* emphasize that, as global markets become increasingly interconnected and environmental challenges grow more pressing, sustainable management has shifted from being an ethical choice to a strategic necessity. Companies are actively integrating environmentally responsible practices to enhance their competitive advantage and ensure long-term viability.

Major international agreements, such as Agenda 21 and the Paris Agreement, have laid the foundation for sustainability initiatives, with organizations like the Division for Sustainable Development Goals playing a key role in driving these efforts forward.

Beyond regulatory compliance, environmental performance has become a critical component of corporate strategy. Many businesses now recognize that sustainability is not merely about meeting obligations; it is a powerful tool for strengthening market position, fostering innovation, and securing long-term growth.

The central question this research addresses is: What does it mean to be competitively green? The dissertation research systematically explores various perspectives on sustainable competitiveness and reviews prior research to identify key management practices that influence corporate performance.

The present dissertation uses a solid framework for research to shed some light on what it takes for businesses to thrive in this new landscape where sustainability and competitiveness go hand in hand.

Green competitiveness is defined as pursuing a market edge grounded in the principles of the green economy, emphasizing sustainable development (Cheng et al., 2018). This concept underscores the interconnectedness of social, economic, and environmental factors in business practices. Green competitiveness fosters an environment conducive to ongoing value creation, ensuring ecological concerns are central to competitiveness.

Achieving environmental competitiveness requires integrating multiple interconnected factors, including economic efficiency, ecological responsibility, resilient infrastructure, sustainable resource management, and overall societal well-being. The challenge lies in effectively balancing these components while striving for more efficient and environmentally conscious solutions.

A fundamental aspect of this process is fostering innovation and operational excellence. Continuous advancements in sustainability practices enable organizations to enhance their performance and maintain a competitive edge. However, beyond individual efforts, regulatory frameworks and policies play a crucial role in shaping the sustainability landscape. Policies that support research, development, and innovation not only contribute to economic growth but also ensure long-term environmental stewardship (Cheng et al., 2019). Recognizing these key insights highlights the necessity of integrating sustainability-driven strategies into both corporate operations and policy frameworks to achieve long-term environmental and economic benefits.

The findings emphasize that early adoption of green products, strategic market positioning, and effective utilization of organizational strengths are critical for sustaining competitive advantage. Furthermore, the establishment of green supply chains and the promotion of a culture of innovation not only contribute to improved sustainability outcomes but also ensure the long-term viability and success of the organization (Ashrafi et al., 2020).

Environmental management involves maintaining ecological balance while promoting societal well-being. Similar to cultivating a thriving ecosystem, the objective is to sustain environmental health while fulfilling human and economic needs. Businesses must adopt strategies that harmonize resource efficiency with environmental responsibility, ensuring long-term sustainability. The ultimate goal is to establish a system where economic growth and environmental stewardship coexist, securing benefits for both present and future generations. Green production represents an evolution in industrial and operational strategies, integrating eco-friendly practices into production processes. This approach prioritizes sustainability by minimizing environmental impact while maintaining efficiency and

effectiveness. Addressing critical issues, such as water scarcity and pollution, extends beyond environmental concerns; these challenges also have direct implications for public health, economic stability, and societal well-being. By implementing sustainable production methods, businesses contribute not only to environmental preservation but also to the long-term resilience and prosperity of communities (Duffett et al., 2018). Green management strategies are like the toolkit for tackling climate change and boosting the green game. These practices represent a hands-on approach to integrating sustainability into business operations, embedding environmental responsibility within strategic decision-making and corporate initiatives (Mintrom, 2016). Studies have shown that combining Lean Production with Environmental Management achieves dual benefits (Tsai et al., 2015). Optimizing operational efficiency not only reduces costs but also enhances environmental sustainability. Implementing measures such as water reuse and energy conservation leads to significant ecological benefits while improving financial performance. This dual advantage underscores the importance of integrating sustainable practices into business operations, ensuring both economic and environmental gains.

In addition, several studies have highlighted the connection between environmental management and Lean production in achieving green competitiveness. Research has shown that green knowledge sharing can enhance green competitive advantage, green service innovation, and green dynamic management. Additionally, green competitive advantage and service can benefit from green dynamic management practices. Competitive advantage is influenced by green service innovation, which plays a vital role in ensuring competitiveness and increasing green competitive advantage. Moreover, knowledge management and effective management practices are essential for creating a competitive edge for companies (Fu et al., 2017).

Therefore, various studies have emphasized achieving a competitive advantage through promoting environmentally friendly products. Enhancing green brand equity can increase a company's market share and success. Selling environmentally friendly products presents an opportunity for gaining a competitive edge, with green brand equity and trust positively influencing green purchase intentions and word-of-mouth recommendations (Konuk et al., 2015).

Companies aiming for long-term success should consider green brand equity, satisfaction, and trust in their green marketing strategies to boost profitability and market share (Adams, 2017). Integrating sustainable business practices not only enhances financial performance but also strengthens customer loyalty and brand reputation. Moreover, maintaining a balanced harmony between humans and nature is essential to mitigating the adverse environmental impacts caused by vari-

ous industrial and economic activities. Businesses that prioritize sustainable operations contribute to environmental preservation while fostering long-term economic resilience.

Additionally, fostering a sustainability-driven mindset requires practical approaches, such as ensuring access to accurate information, setting realistic sustainability goals, and integrating multiple green strategies. These combined efforts are essential for achieving well-rounded and balanced growth, aligning both corporate success and environmental responsibility (Barysienė et al., 2015).

There is still much to uncover regarding the impact of pollution on productivity, particularly in the rapidly growing urban centers of developing economies. The complexity of this issue arises from numerous interrelated factors, making it a challenging yet critical area of research. One emerging concept in this discourse is ecological competitiveness, which highlights the need for a shift away from traditional business models characterized by excessive resource consumption, waste generation, and environmental degradation. Scholars propose adopting structured frameworks similar to Total Quality Management, specifically tailored for environmental sustainability. An Environmental Management System (EMS) could provide businesses with a systematic approach to integrating sustainability into operations, ensuring long-term environmental responsibility while maintaining economic viability. Adopting environmentally sustainable logistics strategies can significantly enhance business competitiveness. By aligning operations with the triple bottom line – economic performance, environmental sustainability, and corporate social responsibility – companies can achieve financial gains while simultaneously contributing to environmental conservation and community well-being. This approach ensures that sustainability is not merely a compliance requirement but a strategic advantage. However, successfully implementing green logistics requires thorough research and analysis. Organizations must conduct comprehensive internal and external assessments to identify the most effective sustainability strategies tailored to their operational models. This process resembles navigating complex and evolving market dynamics, where a deep understanding of sustainability challenges and opportunities is essential for long-term business success (Maitre et al., 2018).

Conversely, there are discussions on the negative impacts of green policies, emphasizing the interconnectedness of the environment with social protection, income security, and poverty. It is essential to implement measures to safeguard workers and their families from the consequences of climate change (Khvesyk et al., 2018). Social protection policies play a crucial role in upholding human rights and promoting a shift toward a green economy and social development, aligning with sustainable development goals. Recent studies (International Labour Office (ILO), 2018) have highlighted the importance of integrating environmental

policies with skills development to promote green competitiveness and social development.

While some countries have successfully incorporated green skills into their strategies, most face challenges due to lacking such skills. Moreover, Skills development is crucial for adapting to changing job landscapes and accelerating the transition toward a green economy.

The need for skills development is evident in global challenges, such as climate change, resource crises, and pollution (Camisón, 2020). The concept of sustainable management within green competitiveness is clarified by examining six key dimensions. These dimensions cover various aspects, such as energy consumption, infrastructure, ecological environment, economic and social sustainability, natural resources, and human resources competitiveness (Tvaronavičienė & Nassar, 2021a).

Second, *the sector-specific definitions of green competitiveness and sustainable management* reveal that India's banking sector has lagged in embracing sustainable practices, with public banks prioritizing social initiatives and private banks leading in environmental sustainability and alignment with international frameworks (Kumar & Prakash, 2020).

Despite efforts by countries like China to strengthen their green strategies, the neglect of sustainable management poses a barrier to progress. In contrast, countries like Costa Rica have prioritized green strategies to enhance national competitiveness, demonstrating the potential benefits of investing in skills development for a sustainable future (International Labour Office (ILO), 2018). Addressing the gaps in skills policies and fostering linkages between strategies and sustainable management is essential to achieving environmental sustainability and a just transition to a green economy (Gautam, 2020).

Recent research in the banking sector has increasingly focused on sustainable finance, emphasizing the need for financial institutions, particularly banks, to generate profit while integrating environmentally responsible practices. A key aspect of this approach is green competitiveness, which aligns financial performance with sustainability objectives (Ritzel et al., 2020).

It is not just about being the best bank out there but about being the best while being kind to the environment. So, banking institutions are starting to weave sustainability into everything they do, from their big-picture strategies to the practical details of everyday operations. It is about using resources wisely, reducing waste, and offering easy products.

However, the focus is not only on what happens inside the bank walls. All sorts of things can influence how green and competitive a bank is (Leheza et al., 2021). Then, there are the strategies banks use, e.g., sector coupling and ramping up the production of renewable fuels. These are not just buzzwords: they are key

moves in the green competitiveness game, e.g., finding new ways to score points while also scoring big for the environment (Rosendal et al., 2024).

The banking sector, exemplified by the Bank Central Asia (BCA) in Indonesia, faces intense competition and must focus on digital transformation, product innovation, and customer experience to maintain its leading position. Prioritizing green competitiveness involves offering eco-friendly products, reducing environmental impact, and complying with green regulations to enhance brand reputation and long-term profitability (Xu et al., 2024).

Moreover, green competitiveness refers to organizations competing while minimizing negative environmental impacts and adopting sustainable practices to gain a competitive edge. Leveraging internal resources, stakeholder relationships, and circular economy principles is crucial for achieving sustainable competitive advantage and enhancing organizational sustainability (Drago et al., 2024).

The banking sector is at a pivotal crossroads. One direction emphasizes the relentless pursuit of competitiveness, characterized by efforts to surpass industry peers, maximize profitability, and adhere to traditional financial norms. However, this intense focus on competition can sometimes overshadow long-term environmental responsibilities, potentially hindering the integration of sustainable practices into core banking operations.

Banks, like any other business, can maintain a competitive edge while upholding environmental responsibility. Achieving this balance requires aligning business practices with sustainability objectives, allowing banks to contribute to environmental preservation, enhance risk management, and strengthen their reputation. Therefore, adopting a responsible and sustainability-driven approach may present challenges, but it yields long-term benefits. Banks can enhance their competitive advantage by demonstrating a commitment to ethical practices and environmental responsibility, positioning themselves as industry leaders not only in financial performance but also in sustainability (Galletta et al., 2024).

The banking sector's transition toward green competitiveness involves adopting sustainable practices, such as green finance policies and investments in renewable energy sources. By aligning with green technology innovations and integrating environmental considerations into decision-making processes, banks can enhance their competitiveness while contributing to sustainable economic growth (Yadav et al., 2024).

Studies show a strong connection between how much data banks use and how efficiently they can run their green operations. By crunching all that data, banks can spot ways to be more sustainable and even develop new green banking products that give them an edge in the market. It is as if they are leveraging their intelligence to generate profits to benefit the planet. When it comes to green banking products, they offer more than just environmental benefits: they are good for busi-

ness, too. Banks can run more efficiently by providing these products and attracting customers who care about the planet. However, it is not all smooth sailing. Challenges include ensuring these green banking products are the real deal, not just a marketing gimmick.

Then, there are the costs of ensuring everything complies with environmental regulations. But if banks can overcome these hurdles, they will be well on leading the pack in green finance and attracting investors who want to put their money where their values are (Caramichael & Rapp, 2024). While the EU has established strict ESG reporting standards, emerging markets are still developing regulatory frameworks to integrate sustainability into banking operations. A comparison of environmental legislation reveals significant differences in enforcement mechanisms, with some countries prioritizing incentives over mandates.

Moreover, visionary leadership, innovative mindset, and responsible business leadership approaches are essential for enhancing organizational sustainability and competitiveness. Organizations can differentiate themselves and sustain competitive advantages by fostering a culture of innovation, embracing sustainable practices, and analyzing global market dynamics. Responsible leadership is critical in navigating market changes, fostering organizational resilience, and driving long-term success in a competitive business environment (Yousef Farhan, 2024).

To achieve long-term success, green competitiveness in the banking sector requires a strategic focus on sustainable practices, green banking products, and responsible leadership. Banks can enhance their competitiveness, drive innovation, and contribute to a more sustainable future for the industry and the economy by integrating environmental considerations into decision-making processes and digital technologies and prioritizing green initiatives. Green competitiveness is essential for organizations to compete effectively in the market while prioritizing environmental sustainability. Businesses can integrate sustainable management practices into strategies to balance economic success with environmental protection and adapt to the evolving landscape of sustainable finance and green economy initiatives.

This research comprehensively examines sustainable management practices within the banking sector, emphasizing the critical integration of environmental, social, and economic considerations to ensure long-term success and generate a positive societal impact (Chaudhuri et al., 2022). Through meticulous analysis, recent studies unveil the multifaceted nature of sustainable management, delving into various facets such as talent development, collaboration with Fintech companies, robust risk management strategies, accelerated digital transformation efforts, and enhancements in customer service. This comprehensive approach (Xu et al., 2024) is imperative for banks like the Bank Central Asia (BCA) to bolster their

competitive edge amidst the ever-evolving market dynamics and regulatory frameworks.

Furthermore, the discourse on sustainable management underscores the delicate balance between profitability and social responsibility (Abdelfattah et al., 2024).

This balance is crucial in ensuring that banking institutions create value not only for shareholders but also for a broader spectrum of stakeholders, including employees, customers, communities, and the environment, thereby fostering long-term viability and resilience in the face of changing socio-economic paradigms (Manigandan et al., 2024).

Studies shed light on specific initiatives to advance sustainability within the banking sector. For instance, discussions surrounding green credit (Yan & Gong, 2024) illuminate the transformative potential of banking mechanisms in promoting energy efficiency and fostering sustainability-oriented investments. Similarly, some insights (Pu et al., 2024) underscore the pivotal role of technological innovations, research, and development in driving environmental conservation efforts, ranging from energy efficiency improvements to waste management solutions.

Additionally, sustainable banking practices (Asian Development Bank, 2022) emphasize the integration of environmental, social, and governance (ESG) criteria into lending decisions, thereby enhancing asset quality, risk management effectiveness, and overall stability.

The introduction of Sustainable Banking Guidelines further underscores the banking sector's commitment to aligning banking activities with sustainability objectives, fostering a culture of responsible lending and investment (Agnese et al., 2024).

Beyond these overarching themes, the studies offer nuanced perspectives on sustainable management across different regions (Caramichael & Rapp, 2024). The challenges and opportunities in Sub-Saharan Africa underscore the importance of tailored investment policies and green finance initiatives in driving sustainable growth and development (Alhassan et al., 2024).

Another research reveals that in developed Asian economies, environmentally friendly practices such as reducing carbon emissions and utilizing renewable energy significantly increased bank cost efficiency. However, in developing Asian economies, socially responsible activities like fair employee compensation and community service substantially positively impacted cost efficiency. Governance improvements, including better corporate management and transparency, enhance efficiency in developing economies. Despite these differences, banks in developed economies consistently outperformed those in developing economies regarding overall cost efficiency, primarily due to their better management of environmental factors (Aristei & Gallo, 2022).

Lastly, visionary leadership and innovative practices emerge as pivotal enablers of sustainable business development (Cantero-Saiz et al., 2024).

Strong leadership fosters a culture of innovation, resilience, and adaptability, essential qualities for navigating the complexities of the modern banking landscape while simultaneously advancing environmental sustainability, social responsibility, and long-term success (Yousef Farhan, 2024).

Third, *systematic definitions of green competitiveness and sustainable management*, including their similarities, differences, and a consolidated understanding, reveal key insights into how these concepts intersect and diverge.

- *Similarities.* Both green competitiveness and sustainable management prioritize the responsible use of resources and aim to minimize environmental impact. They are aligned in their shared objective of promoting environmental and social responsibility within business practices.
- In addition, both concepts aim to integrate sustainability into business strategy to drive long-term success and improve the company's standing with stakeholders.
- *Differences regarding green competitiveness*. This concept is market-oriented, focusing on strategies that provide a competitive advantage through environmentally friendly initiatives. Its outward-facing approach emphasizes ways to differentiate a company in the marketplace by adopting sustainable practices (e.g., green product innovation and competitive positioning).
- *Differences regarding sustainable management.* This concept is more inward-looking, emphasizing internal processes, resource efficiency, and holistic approaches to achieve long-term sustainability. Sustainable management provides a broader framework that encompasses the organization's environmental goals and economic and social responsibilities. It is the foundation for green competitiveness, focusing on creating a sustainable internal culture that supports external competitiveness.
- *Consolidated definition*. Sustainable management for green competitiveness in the banking sector is a strategic approach that incorporates environmental sustainability into core banking operations while aligning with stakeholder values. This framework highlights the essential role of key stakeholders, including employees, customers, and board members, in shaping and influencing the bank's sustainability initiatives and long-term competitiveness.

In the banking sector, sustainable management provides an internal framework, enabling banks to adopt green products, eco-friendly technologies, and socially responsible practices that align with stakeholder expectations. When aligned with green competitiveness, sustainable management helps banks balance

environmental protection (planet), financial performance (profit), and social responsibility (people). This comprehensive strategy ensures that sustainable practices are not only regulatory responses but are deeply embedded in the bank's values, fostering long-term profitability and competitiveness in a sustainable marketplace.

Recent studies provide a comprehensive view of sustainable management within the banking sector, emphasizing the interconnectedness of environmental, social, and economic factors. This highlights the need for banks to adopt sustainability as a strategic imperative, ensuring continued relevance and prosperity. Sustainable management, therefore, becomes a dynamic process that allows banks to adapt practices in response to stakeholder priorities. Banks can better engage stakeholders by adopting green products, implementing eco-friendly technologies, and fostering a socially responsible image. This approach moves beyond minimizing environmental impact to enhancing stakeholder engagement and securing long-term profitability and competitive positioning.

In the context of the consolidated definition provided in the dissertation, environmental sustainability refers to the integration of ecological responsibility into core banking operations, ensuring that financial institutions minimize their environmental impact while maintaining long-term economic and social viability. This concept encompasses reducing carbon footprints, promoting sustainable finance, implementing green banking products, and aligning business practices with global environmental standards. The definition emphasizes that environmental sustainability is not merely an ethical obligation but a strategic imperative that enhances green competitiveness by embedding sustainability into decision-making processes.

The academic discourse on green competitiveness and sustainable management can be categorized into three primary dimensions:

- General definitions – foundational theories and global perspectives on sustainability and competitiveness.
- Sector-specific definitions – research focused on banking and financial institutions.
- Systematic definitions – interdisciplinary approaches integrating sustainability into banking operations.

By synthesizing insights across these dimensions, this chapter establishes a comprehensive framework for understanding how banks can integrate sustainability-driven strategies to enhance long-term competitiveness.

A critical analysis of existing frameworks suggests that green competitiveness is not merely an extension of corporate social responsibility but a fundamental restructuring of banking operations. Unlike traditional risk management, which reacts to external pressures, sustainable management proactively embeds environ-

mental and social considerations into financial decision-making. The effectiveness of such integration varies depending on institutional capabilities, regulatory environments, and stakeholder expectations, requiring a multidimensional approach to sustainability-driven banking.

From the author's perspective, green competitiveness and sustainable management are complementary yet distinct strategies for integrating sustainability into business operations. Green competitiveness is an outward-facing, market-driven approach that positions organizations advantageously by leveraging eco-friendly innovations and sustainability-driven differentiation. In contrast, sustainable management is internally focused, ensuring resource efficiency, process optimization, and long-term environmental responsibility.

The author defines sustainable management for green competitiveness in the banking sector as a strategic framework that embeds sustainability into core operations while aligning with stakeholder interests. This integration enables banks to balance environmental protection (planet), financial performance (profit), and social responsibility (people), ensuring that sustainability is not just a compliance requirement but a competitive advantage that fosters resilience and differentiation in the financial sector.

In conclusion, sustainable management and green competitiveness in the banking sector are closely linked, reinforcing the other to achieve environmental responsibility and market resilience. Banks enhance adaptability in a changing landscape by aligning operations with sustainability goals through stakeholder-driven strategies. Banks can meet regulatory requirements while gaining competitive advantages by leveraging a multidimensional approach, e.g., spanning operational efficiency, resource stewardship, and social accountability. This approach ensures that sustainable practices are embedded as core components of the bank's value creation and long-term viability rather than merely fulfilling regulatory obligations. Furthermore, integrating advanced technologies, like green fintech and digital banking solutions, can amplify the impact of sustainable strategies. By fostering innovation and transparency, banks can better align their goals with the broader agenda of global environmental sustainability.

1.2. Comparative Analysis and Systematization of Recent Research on Sustainable Management for Green Competitiveness in the Banking Sector

Traditional banking has become a thing of the past as significant demographic, cultural, technical, economic, regulatory, and legitimacy changes gave rise to the current business models (Shkodina et al., 2019).

In today's world, an increasing number of customers at traditional banks actively seek green banking products and investment opportunities that align with their environmental values. Many of these customers also express interest in identifying the environmental practices of the institutions they engage with.

These shifts are not merely trends but essential adaptations businesses must embrace to navigate challenges and maintain competitiveness. Sustainable management has emerged as a pivotal strategy for banking success, offering benefits such as improved business efficiency and the ability to respond quickly to a rapidly changing market environment.

By incorporating sustainable practices into their operations, banks can meet the changing expectations of environmentally conscious customers while promoting long-term resilience and growth. This approach aligns with global sustainability goals and positions banks as responsible leaders. As a result, they earn trust and loyalty from both current and future generations of customers. The literature suggests that sustainable banking can positively impact corporate image, customer growth, and potential profitability. However, challenges remain in measuring sustainability performance and developing standardized criteria for sustainable banking practices. Studies also emphasize the importance of collaboration among stakeholders and the need for transparency and accountability in sustainable banking efforts (Riegler, 2023).

Today, environmental credibility is crucial for banks to achieve economic success. The evolution of traditional banking practices faces a paradigm shift due to various socio-economic, technological, and regulatory changes (Soebandrija, 2019). Sustainable management in banking has become imperative, enhancing productivity and responsiveness to dynamic market conditions (Cragg & Mcnamara, 2015; Bagheri et al., 2016). Furthermore, the credibility of environmental sustainability is paramount for economic success in contemporary banking operations (Asongu & Biekpe, 2018; Junge, 2019; Yousef Farhan, 2024).

Digital technology has catalyzed significant transformations in the banking sector, urging banks to adopt sustainable practices for competitive advantage and banking stability (Maixé-Altés, 2015; Themistocleous et al., 2015; Bilan et al., 2019; Abdelfattah et al., 2024; Yousef Farhan, 2024). The evolution of banking highlights the critical role of digitalization and the adoption of information and communication technology (ICT) in enhancing operational efficiency and customer service. Integrating e-banking services and platforms is essential to meet customer expectations and improve accessibility (Ling et al., 2016; Flögel & Beckamp, 2019). Research shows that in the U.S., the development of the corporate bond market is significantly influenced by ICT development in the long term and bank loans in both the short and long term, with bank loans negatively impacting bond issuance. In Lithuania, the corporate bond market is more sensitive to legal and regulatory framework changes, which shows a short-term positive but

long-term negative impact on market development (Astrauskaitė, 2016). Internet banking has become indispensable in elevating service quality and addressing customer needs through technological advancements. Despite these benefits, ensuring high customer satisfaction remains a persistent challenge. This requires ongoing enhancements in web design, content, usability, and speed to meet evolving customer expectations and preferences continually (Katta et al., 2019).

How different parts work together in value networks shows how important it is to share knowledge and use technology like computers and the Internet to make banking more sustainable (Grant & Yeo, 2018; Bag et al., 2020). Collaborative efforts between business managers and IT administrators are essential for facilitating seamless knowledge transfer and tackling sustainability challenges.

Sustainable supply chain management (SSCM) integrates sustainability into core business functions like purchasing, manufacturing, and distribution (Sampurna Panigrahi et al., 2019). For banks, SSCM principles can be applied to their procurement and operational strategies to enhance sustainability and competitiveness (Nevárez & Féliz, 2019). The role of sustainability practices in enhancing operational efficiency and service quality underscores the fact that banks can draw parallels to improve their operational processes and customer satisfaction through sustainable initiatives (Bezerra et al., 2018).

Successfully implemented sustainable programs profoundly impact firms' internal operations and supply chain processes. They enhance operational efficiency and contribute to improved environmental and social outcomes. By embedding sustainability into their core strategies and operations, banks can achieve higher (Cragg & Mcnamara, 2015). Additionally, extensive data analysis drives innovation and learning success in sustainable supply chains.

Addressing power imbalances and improving information-sharing mechanisms are central to enhancing sustainability within the banking industry. Collaboration with Fintech companies can further enhance banks' competitiveness in sustainable management for loans (Asongu & Biekpe, 2018; Flögel & Beckamp, 2019).

The digital transformation of banking presents opportunities and risks, including cybersecurity threats and ethical concerns (Bilan et al., 2019). Bridging the gap in digitalization across regions is essential for promoting economic competitiveness and banking stability.

The chronological progression of ideas illustrates the evolution of sustainable management practices in banking, driven by technological advancements and regulatory changes, and underscores the importance of digitalization and ICT integration in fostering sustainability and competitiveness (Soebandrija, 2019; Yousef Farhan, 2024).

Green initiatives and integrating sustainability principles are increasingly vital for fostering innovation and ensuring a sustainable future (Konuk et al., 2015;

Rahman & Barua, 2016; Stock et al., 2018). Businesses are now prioritizing practices that reduce environmental impact and promote long-term sustainability across various facets of operations. For example, in Green Product Management, companies focus on sustainable supply chains, manufacturing systems, and knowledge management to enhance product sustainability (Junge, 2019; Bag et al., 2020). These efforts minimize resource consumption and waste generation while improving product efficiency and environmental performance.

Similarly, green platform management examines how digital and physical platforms, such as online banking systems, can be designed and operated in eco-friendly ways (Katta et al., 2019; Asongu et al., 2019; Flögel & Beckamp, 2019). Researchers explore strategies to reduce energy consumption, optimize resource use, and lower the carbon footprint associated with digital operations.

In green HR management, sustainable practices are integrated throughout human resources, from recruitment to employee engagement in green initiatives (Shkodina et al., 2019; Bag et al., 2020; Chaudhuri et al., 2022). This approach enhances workplace sustainability and fosters social responsibility by aligning HR policies with environmental goals.

Moreover, Environmental Management focuses on embedding sustainable banking practices within organizational frameworks (Junge, 2019; Katta et al., 2019; Chaudhuri et al., 2022). Studies examine how banking decisions, such as investments and accounting practices, can support environmental sustainability and reduce the ecological footprint of business operations.

Green banking management further emphasizes integrating environmental sustainability into banking policies and practices (Asongu et al., 2019; Bag et al., 2020; Asian Development Bank, 2022), including promoting sustainable investments, adopting green accounting standards, and ensuring that banking decisions align with broader sustainability objectives.

By embracing these interdisciplinary approaches to green management, organizations enhance their operational efficiency and competitiveness and contribute positively to environmental conservation and societal well-being. These efforts underscore the importance of integrating sustainability into core business strategies to build a resilient and sustainable future for global communities.

Other research shows a positive link between Lean Production (LP) and Environmental Management (EM), highlighting that improved environmental practices lead to cost reductions and better efficiency. It also points out that traditional studies on green competitiveness often overlook competitive indices' interconnectedness and varying importance (Tsai et al., 2015). This research explores new approaches to green competitiveness, confirming that effective environmental management supports sustainability and offers a competitive advantage by reducing costs and enhancing overall performance.

After uncovering significant research in these fields, it becomes essential to explore the connections between "banking," "sustainability," and "competitiveness." The connection between green competitiveness and sustainable management underscores some holistic approaches that organizations must adopt to integrate environmental sustainability into their operations effectively. It goes beyond mere compliance to encompass a proactive stance in environmental sustainability, economic viability, and social responsibility.

Organizations mitigate environmental impact by aligning green competitiveness practices with sustainable management principles and enhancing resilience in a rapidly changing global landscape. This integrated approach fosters innovation in sustainable technologies and practices, positioning businesses as leaders in responsible corporate citizenship. It is about creating value beyond banking returns to include positive contributions to communities and the environment. Achieving these goals requires robust strategies prioritizing sustainable development across all facets of operations, from supply chain management and product lifecycle to employee engagement and customer relations. Sustainability should not be limited to reducing carbon footprints or implementing environmentally friendly policies; it must be embedded into the organization's culture and strategic vision as a core guiding principle.

Furthermore, sustainable management practices can offer tangible benefits, including cost savings through efficient resource utilization, enhanced brand reputation, and improved risk management. Organizations that actively tackle environmental and social challenges are better positioned to adapt to regulatory shifts, meet consumer expectations, and withstand competitive pressures. Researchers discuss how integrating ESG (environmental, social, and governance) criteria into banking practices promotes environmental sustainability, social inclusion, and long-term banking stability while identifying challenges like regulatory uncertainty and innovation and risk management opportunities in sustainable banking (Sharma et al., 2024).

Another research found that sustainable banking can effectively reduce income inequality in countries with weak rules of law by fostering economic opportunities and building trust between lenders and borrowers (Rahman et al., 2023). The results demonstrate that sustainable banks play a crucial role in equalizing opportunities, particularly in environments where institutional frameworks are inadequate. However, in countries with strong legal protections, the impact of sustainable banking on inequality reduction is less significant, indicating that robust institutions may already fulfil the role sustainable banking seeks to address (Úbeda et al., 2022). In today's interconnected world, where stakeholders increasingly scrutinize corporate behavior, demonstrating a commitment to sustainable practices is crucial for long-term success. It builds trust with customers, investors,

and communities, fostering enduring relationships based on shared values and ethical principles.

A comparative evaluation of green banking strategies in developed versus emerging markets suggests that financial institutions adopting sustainability-oriented policies outperform their counterparts in long-term profitability and risk mitigation. However, challenges persist in aligning internal corporate objectives with broader global sustainability goals. Empirical evidence indicates that banks incorporating AI-driven ESG analysis demonstrate improved financial resilience, yet the scalability of such digital solutions remains a pressing concern, particularly for smaller institutions with limited technological infrastructure.

From a business perspective, the increasing adoption of green financial instruments signifies a shift in investor behavior, where sustainability is no longer perceived as a trade-off against profitability but rather as a value-adding component of corporate strategy. However, the effectiveness of green bonds and sustainability-linked loans remains contingent on regulatory consistency and the credibility of ESG reporting mechanisms, highlighting the need for improved governance frameworks to prevent greenwashing.

The dissertation distinguishes between sustainable management and sustainable strategies, emphasizing their interdependent but distinct roles in integrating sustainability into business operations.

Sustainable management is a comprehensive, long-term framework that guides an organization's sustainability approach. It ensures the systematic integration of environmental, social, and economic objectives into corporate governance and decision-making. This approach prioritizes operational efficiency, regulatory compliance, and stakeholder engagement, creating a foundation for sustainable development across all business functions.

For example, in the banking sector, sustainable management involves establishing governance policies for green finance, embedding ESG (environmental, social, and governance) principles into risk management frameworks, and fostering a corporate culture that prioritizes long-term sustainability. A bank that adopts green lending policies and integrates climate risk into investment decisions exemplifies sustainable management, as these measures ensure that sustainability remains a core component of its business model.

Sustainable strategies, in contrast, are specific, action-oriented initiatives developed within the broader sustainable management framework. They outline how an organization implements sustainability goals in practical and measurable ways. These strategies are adaptive and results-driven, focusing on achieving concrete sustainability outcomes.

For instance, a bank implementing a green bond issuance program or introducing paperless banking initiatives is employing sustainable strategies. Other ex-

amples include offering low-interest loans for renewable energy projects, adopting AI-driven ESG investment tools, and partnering with fintech firms to develop carbon footprint tracking for customers. Each of these strategies contributes to the overarching goal of sustainability but is tailored to specific objectives and operational needs.

While sustainable management provides the governance framework and long-term direction, sustainable strategies serve as the tactical measures that drive sustainability efforts forward. Sustainable management ensures that an organization is committed to sustainability at a structural level, while sustainable strategies define the specific pathways to achieving sustainability objectives.

By integrating both elements effectively, organizations can maintain resilience in evolving regulatory landscapes, enhance their market competitiveness, and fulfil stakeholder expectations for sustainable business practices.

Looking ahead, the evolution toward green competitiveness and sustainable management represents a business imperative and a moral obligation. It is about safeguarding the planet's resources for future generations while fostering inclusive growth and prosperity. By embracing sustainability as a core strategic pillar, organizations can drive positive societal impact and contribute to a sustainable future for all. This research employs a structured theoretical approach to systematically review and synthesize existing research on the relationship between green banking and green competitiveness within the banking sector. The analysis spans studies published between 2019 and 2024, drawing from key academic databases, including WOS, KJD, RSCI, and SCIELO. Only English-language publications were considered to maintain consistency and relevance.

The theoretical framework categorizes sustainable management practices into five core areas:

- Green product management is the adoption of environmentally friendly financial products and services.
- Green platform management – the integration of sustainability into banking technology and digital services.
- Green human resources management – the implementation of sustainability-driven HR policies and employee engagement initiatives.
- Green financial management – the strategic alignment of financial investments with sustainability objectives.
- Environmental management – the adoption of corporate policies to minimize environmental impact in banking operations.

By structuring the literature into these key dimensions, this research enables a comparative evaluation of how banking institutions incorporate sustainability into their strategic frameworks. Each area is examined for its contribution to green competitiveness, highlighting best practices, regulatory considerations, and emerging trends in sustainable banking.

- To ensure a comprehensive and rigorous theoretical synthesis, the research follows a systematic review approach involving multiple stages of literature selection and analysis:
    1. Identification (2019–2024). The initial search yielded 500 relevant articles using keywords related to "green banking" and "green competitiveness."
    2. Screening. After removing duplicate entries, 450 articles remained.
    3. Title and abstract review. In total, 300 studies were shortlisted based on relevance to sustainability in banking.
    4. Eligibility assessment. In total, 100 full-text articles were examined in detail.
    5. Exclusion criteria. In total, 40 articles were removed due to a lack of focus on banking or sustainability-related themes.
    6. Qualitative synthesis. In total, 60 studies were selected for the final systematic synthesis to shape the conceptual framework.
    7. This systematic review process is visually summarized in Figure 1.2, illustrating the structured approach undertaken to identify, screen, and categorize relevant literature. This methodology allows for the research to ensure transparency and rigour in analyzing key themes and research gaps in sustainable banking.
    8. The research uses this structured analysis to map out the evolution of sustainable management practices in banking, identifying key drivers of green competitiveness and assessing their alignment with broader sustainability goals. This approach bridges theoretical foundations with practical applications, offering insights into how banks can embed sustainability into core business strategies to enhance long-term resilience, regulatory compliance, and competitive advantage.
    9. This systematic theoretical framework serves as a foundation for evaluating sustainable banking strategies, ensuring that financial institutions integrate environmental, social, and governance (ESG) considerations into their operations effectively. The developed framework, as detailed in Figure 1.2, provides a structured review for financial institutions to align sustainability initiatives with market demands and stakeholder expectations.

The systematic literature review methodology does not create a theoretical model but rather enables the identification and categorization of existing theoretical perspectives on sustainable banking. By analyzing the literature through a structured approach, key management theories relevant to green competitiveness are identified and assessed for their applicability. The synthesis of these theories

informs the conceptual model developed in the dissertation, ensuring a cohesive and evidence-based framework for understanding sustainable banking practices.

The findings are categorized into five main areas of sustainable management: green product management, green platform management, green human resources management, environmental management, and green financial management, as presented in Table 1.1. Green product management addresses sustainable practices within supply chains, intelligent manufacturing, and knowledge management systems, with contributions from authors like Junge et al. (2019), Bag et al. (2020), and Abdelfattah et al. (2024), who explore strategies to enhance product sustainability. Green platform management focuses on the sustainable handling of information resources and digital banking, with authors such as Katta et al. (2019) and Flögel and Beckamp (2019) investigating eco-friendly platform designs.

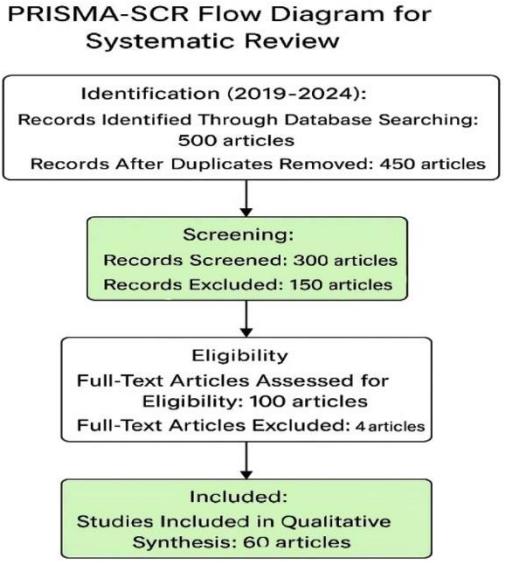


Fig. 1.2. PRISMA-SCR flow diagram for systematic review (created by the author)

Green HR management examines how sustainable HR practices align with environmental goals, from recruitment to employee engagement, as discussed by Shkodina et al. (2019), Bag et al. (2020), and Chaudhuri et al. (2022). Environmental management covers sustainable practices that minimize environmental impact through policies and operations, as shown by Junge (2019) and Drago et al. (2024). Lastly, green banking management involves embedding sustainability within banking policies and practices, as explored by Asongu et al. (2019), Bag et al. (2020), and the Asian Development Bank (2022).

A close analysis of these five areas reveals innovative ways digital platforms can support environmental goals and how green HR policies can enhance employee engagement, creating sustainable and more cohesive communities.

This comprehensive perspective on sustainable management highlights the synergy between sustainability and competitiveness, showcasing how green practices can enhance innovation and efficiency. It provides a practical framework for addressing current challenges while aligning sustainability efforts with broader business objectives.

The sources published in the same year are grouped based on their focus on specific green management practices, such as green product management, platform management, HR management, environmental management, and financial management.

Table 1.1. Sustainable management leading to green competitiveness

Year	Authors	Green product management	Green platform management	Green HR management	Environmental management	Green banking management
1	2	3	4	5	6	7
2019	Asongu et al.		X			X
2019	Flögel & Beckamp		X			
2019	Junge et al.	X			X	
2019	Katta et al.		X		X	
2019	Shkodina et al.	X		X		X
2020	Bag et al.	X	X	X		X
2022	Asian Development Bank	X	X			X
2022	Chaudhuri et al.			X		X
2024	Abdelfattah et al.	X		X	X	
2024	Agnese et al.	X				X
2024	Alhassan et al.		X	X		
2024	Cantero-Saiz et al.		X		X	
2024	Caramichael & Rapp			X		
2024	Drago et al.	X			X	
2024	Farhan		X			
2024	Galletta et al.		X		X	
2024	Manigandan et al.		X	X		X
2024	Pu et al.		X	X		

End of Table 1.1

1	2	3	4	5	6	7
2024	Rosendal et al.		X		X	X
2024	Xu et al.		X			X
2024	Yan & Gong		X			X
2024	Yadav et al.				X	
2024	Yousef Farhan		X			

This categorization emphasizes the unique contributions of each research to sustainable management in the banking sector. For example, while one research may address green product management, another from the same year might concentrate on HR practices.

Table 1.1 organizes studies chronologically and thematically to track the evolution of research priorities in sustainable management. Studies are first ordered by publication year to demonstrate the growing emphasis on sustainability over time. Each year, they are categorized by their specific focus areas, such as platform or financial management, highlighting the diversity of research within that period.

This structure facilitates a clear comparison of how various studies address distinct aspects of green competitiveness. By employing this refined approach, the grouping reveals patterns and trends in green management practices, offering insights into their interconnectedness.

This comprehensive analysis not only underscores the breadth of contributions but also serves as a framework for addressing sustainability challenges and developing effective green management strategies. It ultimately lays the foundation for future research, providing a practical model to enhance competitiveness through sustainable practices.

Figure 1.3 illustrates the focus areas of various authors on green management practices within the banking sector. Each cell represents the presence (marked in green) or absence (unmarked) of the respective authors' focus on specific green management practices.

This section directly supports the dissertation's objectives by comprehensively analyzing sustainable management practices and their influence on stakeholder decision-making and green competitiveness in the banking sector. It allows for a comparative assessment of literature coverage, helping to identify patterns, gaps, and areas of concentration among leading studies. Furthermore, it reinforces the need for an integrated, stakeholder-oriented framework that addresses both environmental and strategic dimensions. By mapping scholarly attention, this matrix also highlights the theoretical grounding and practical relevance of the proposed research model.

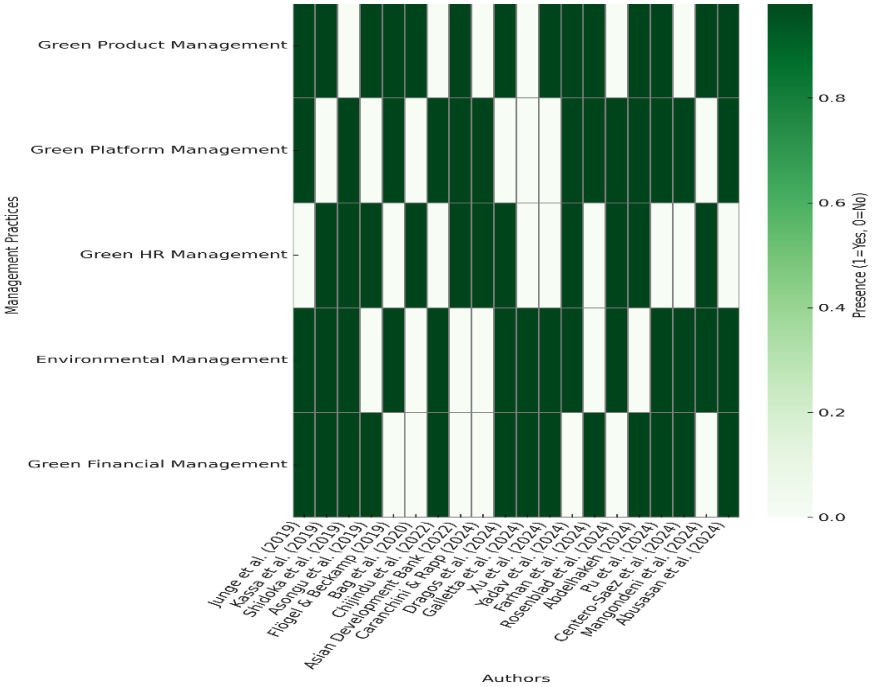


Fig. 1.3. Sustainable management practices leading to green competitiveness (created by the author)

It identifies critical gaps in the existing literature, focusing on five key thematic areas: green product management, green platform management, green HR management, environmental management, and green financial management. This section lays a strong foundation for developing a model to enhance stakeholder decision-making processes and align sustainable practices with long-term competitiveness. The systematic categorization of research within these areas strengthens the relevance and applicability of the research model, ensuring its alignment with the dissertation research core goals.

This approach validates the importance of integrating sustainable practices to meet stakeholder expectations and improve operational efficiencies. Highlighting intersections, such as those between green HR and platform management, underscores the potential for a coordinated strategy to drive environmental and organizational benefits.

The PRISMA-SCR framework is critical in organizing and evaluating sustainable management practices across the five thematic areas. Rather than isolating these practices, the analysis emphasizes their collective impact on green competitiveness. This method identifies overlooked synergies, particularly in

resource-constrained settings like Lebanon, and demonstrates how tailored sustainability frameworks can address unique regulatory and operational challenges.

By categorizing and synthesizing sustainable management research, this research fills a significant gap in the literature and establishes a foundation for building a model that integrates theoretical rigour with practical applicability.

1.3. Management Theories Linked to Sustainable Management for Green Competitiveness

In today's rapidly evolving banking sector, the imperative to integrate sustainability and green competitiveness has reached unprecedented levels. Banks face mounting pressures from stakeholders, regulatory bodies, and the broader public to tackle environmental and social challenges proactively.

This necessitates superficial changes and a fundamental embedding of sustainable practices into the core of their operational strategies.

Management theories play a pivotal role in guiding banks through this transformative journey. They provide essential frameworks and analytical tools that illuminate the path toward sustainable management. By leveraging these theories, banks can gain valuable insights into effectively integrating sustainability principles into their organizational DNA.

This includes fostering innovation in environmental sustainability, aligning corporate strategies with societal expectations, and enhancing operational efficiencies through sustainable practices.

This section will examine various studies on sustainable management and green competitiveness in the banking sector.

Subsequently, it will provide a detailed chronological overview of recent management theories. These theories offer valuable insights and strategies to ensure long-term viability for banks while effectively balancing economic, social, and environmental considerations.

The innovation theory (Hermans, 2018) offers a framework for identifying technological progress as a dynamic process involving the interaction of various actors, including governments, NGOs, research institutes, and banks. This theory underscores institutions' significant role in shaping innovation, providing valuable insights into how banks can innovate in sustainable management.

Similarly, the theory of sensemaking (Dervin, 1992; 1998) posits that individuals interpret information based on their specific contexts, influencing their problem perception and decision-making processes. The competitiveness concept for SMEs links organizational structure, knowledge quality (KQ) practices, and innovation.

This concept is relevant for banks aiming to enhance their competitive position through sustainable management practices, emphasizing the importance of internal knowledge and creativity.

The theory of radical innovation and management challenges (Kodama, 2017) explains the need for large businesses to pursue radical innovation, which involves significant changes from their current capabilities.

Therefore, innovative sustainable practices are being adopted to address challenges related to market dynamics, technological advancements, and organizational structures within the banking sector.

The theory of transition (Huguenin & Jeannerat, 2017) explores long-range cycles of transformation, encompassing technical, organizational, economic, social, cultural, and political changes. It provides a holistic view that can guide banks in adopting sustainable practices and preparing for future market and regulatory changes.

Huntley Lewis emphasizes the importance of environmental laws and public policy in driving sustainable business practices. Banks can advocate for and adhere to such policies to bolster their sustainability efforts and competitiveness (Huntley Lewis, 2019).

Intellectual capital (IC) theory (Vinícius et al., 2020) highlights the importance of intangible assets such as human capital, relational capital, and structural capital. Banks can leverage their intellectual capital to drive sustainable practices and improve competitiveness.

Other researchers (Camisón, 2020) broadened the view of innovation management by including a wide array of actors and emphasizing the role of institutions. This perspective can guide banks in developing comprehensive innovation strategies incorporating sustainability (Kokkonen & Ojanen, 2018).

Banks are under increasing pressure to address environmental and social issues, and they need to incorporate sustainable practices into their main strategies to stay competitive and thrive in the long run (Bhattacharya et al., 2020).

Management theories provide valuable insights and tools for identifying and implementing these practices (Ju et al., 2019).

By leveraging these theories, banks can create innovative strategies that balance banking performance with social responsibility and environmental care, ensuring their success in a market that increasingly values sustainability (Brodowska-Szewczuk, 2019; Castagna et al., 2020).

Management theories have evolved significantly, providing a robust framework for analyzing and enhancing organizational practices (Deslatte & Stokan, 2020). Moreover, these theories underscore the importance of strategic foresight and adaptability in navigating the complexities of sustainability integration.

They empower banks to proactively address challenges such as resource scarcity, regulatory shifts, and evolving stakeholders' preferences, thereby positioning themselves as leaders in sustainable finance.

As banks navigate this paradigm shift toward sustainability and green competitiveness, applying management theories enhances their resilience and long-term viability and reinforces their role as responsible corporate citizens.

By embracing these theories, banks can forge a path toward a future where profitability coexists harmoniously with environmental and social well-being, ensuring sustainable success in a competitive global landscape.

When managing banks sustainably and making them more competitive in a green-focused world, these theories give us valuable ideas and strategies. They help us balance making money, being socially responsible, and protecting the environment. The flow diagram in Figure 1.4 illustrates the systematic approach employed in the research using the PRISMA-SCR (Preferred Reporting Items for Systematic Reviews and Meta-analyses for Scoping Reviews) framework. The methodology facilitated the identification and systematization of management theories relevant to sustainable banking and green competitiveness, forming the basis for a structured theoretical framework.

Therefore, the systematic approach enabled a structured evaluation of management theories, ensuring that selected theories, such as RBV, MBV, dynamic capabilities, and stakeholder theory, applied to sustainable banking. This process reinforced the relevance of these theories in explaining green competitiveness.

The process is outlined as follows:

- *Identification (2020–2024).* The first step involved an extensive search for relevant literature in databases like WOS, KJD, RSCI, and SCIELO, specifically targeting publications from 2020 to 2024. This approach ensured that the research was based on the most recent and pertinent studies on sustainable management and green competitiveness in the banking sector.
- *Eligibility.* Full-text articles that passed the screening process were further assessed for eligibility. The inclusion criteria focused on peer-reviewed articles that specifically addressed management theories, sustainability practices, and green competitiveness within banking.
- *Data extraction.* Critical information was extracted from the eligible studies. This included details on the management theories applied, the specific sustainability practices discussed, and their impact on green competitiveness.
- *Synthesis of findings.* The extracted data were synthesized to identify patterns, themes, and relevant theoretical frameworks. This step involved analyzing how these theories and practices could be integrated into a cohesive base for sustainable banking.
- *Development of the framework.* A theoretical framework was developed based on the synthesized findings. This framework integrates management theories, such as the Resource-Based View (RBV) and Dynamic

Capabilities (DC), into practical strategies for achieving sustainable management and enhancing green competitiveness in the banking sector.

- *Reporting.* The final step involved documenting the methodology and the resulting framework.

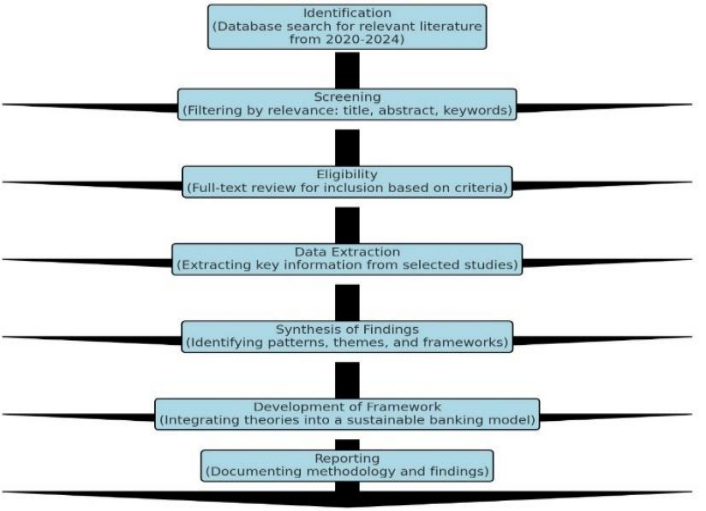


Fig. 1.4. Developing a theoretical framework for sustainable management and green competitiveness in banking (created by the author)

The following Table 1.2 integrates key management theories into a structured approach for sustainable management (SM) in banking. This table highlights the interplay between internal resource optimization (RBV), market alignment (MBV), adaptability to regulatory and environmental changes (dynamic capabilities theory), and stakeholder engagement (stakeholder theory). These elements collectively define the strategic framework for achieving green competitiveness (GC) in the banking sector. Moreover, it explains recent management theories critical for banks aiming to be sustainable and competitive in today's market. Introduced by Michael Porter (1980), the five-force model identifies key factors shaping industry competitiveness, such as supplier power, buyer power, threat of new entrants, threat of substitutes, and competitive rivalry. This will also aid strategic decision-making by analyzing the impact of these forces on industry profitability, enabling banks like the Bank Central Asia to assess their industry landscape, identify key competitive dynamics, and make informed decisions to sustain growth and innovation (Xu et al., 2024; Kubus, 2020; Caramichael & Rapp, 2024; ADB, 2022).

Table 1.2. Recent management theories for sustainable management and green competitiveness in the banking sector

Management Theory	Citation	SM	GC	BOTH
Porter's five-force model	(Kubus et al., 2020); (Asian Development Bank, 2022); (Caramichael & Rapp, 2024) (Xu et al., 2024)		✓	
Theory of planned behaviour	(Gautam, 2020); (Chen et al., 2024); (Yan & Gong, 2024); (Kubus et al., 2020); (Asian Development Bank, 2022); (Pu et al., 2024) (Yousef Farhan, 2024)	✓		
Resource-based view (RBV) theory	(Chaudhuri et al., 2022); (Kubus et al., 2020); (Asian Development Bank, 2022); (Pu et al., 2024); (Drago et al., 2024); (Alhassan et al., 2024); (Caramichael & Rapp, 2024)			✓
Market-based view (MBV) theory	(Kubus et al., 2020); (Asian Development Bank, 2022); (Xu et al., 2024)		✓	
Triple bottom line theory	(Wang & Li, 2024); (Kubus et al., 2020); (Pu et al., 2024); (Caramichael & Rapp, 2024); (Yousef Farhan, 2024)			✓
Stakeholder theory	(Chaudhuri et al., 2022); (Drago et al., 2024); (Cantero-Saiz et al., 2024); (Kubus et al., 2020); (Pu et al., 2024); (Asian Development Bank, 2022); (Caramichael & Rapp, 2024); (Yousef Farhan, 2024)	✓		
Circular economy theory	(Wang & Li, 2024); (Drago et al., 2024)			✓
Dynamic capabilities theory	(Chaudhuri et al., 2022); (Kubus et al., 2020); (Deslatte and Stokan, 2020); (Pu et al., 2024)			✓
Management Theory	Citation	SM	GC	BOTH
Corporate social responsibility (CSR)	(Wang & Li, 2024); (Agnese et al., 2024); (Kubus et al., 2020); (Caramichael & Rapp, 2024)			✓
Digital transformation strategies	(Lóska & Uotila, 2023); (Caramichael & Rapp, 2024); (Yousef Farhan, 2024)		✓	

Despite being developed in 1991, the theory of planned behavior remains relevant and is frequently cited in recent literature. This theory explores the relationship between environmental knowledge, attitudes, and behavior, especially in consumer decision-making processes. In the banking sector, it helps to understand how behavioral intentions and subjective norms influence sustainable practices and the adoption of green initiatives (Gautam, 2020; Chen et al., 2024; Yan & Gong, 2024; Kubus, 2020; ADB, 2022).

Although the resource-based view (RBV) is an older theory, it is still widely used in recent research. This theory leverages internal resources and capabilities to achieve a sustainable competitive advantage. It highlights the importance of unique and valuable resources in driving long-term success. RBV encourages institutions to integrate environmental practices into their core strategies in the banking sector to enhance green competitiveness. This theory is crucial in guiding banks to develop sustainable growth strategies tailored to their specific needs (Chaudhuri et al., 2022; Kubus, 2020; ADB, 2022; Pu et al., 2024; Drago et al., 2024; Alhassan et al., 2024; Caramichael & Rapp, 2024).

The market-based view (MBV) theory in banking emphasizes how banking institutions gain a competitive advantage by analyzing and exploiting market opportunities (Xu et al., 2024). Unlike the resource-based view (RBV), which focuses on internal resources, MBV looks outward at market dynamics, customer preferences, and industry trends (Kubus et al., 2020). Essentially, MBV suggests that banks can enhance their competitiveness by strategically positioning themselves within the market, identifying and capitalizing on emerging opportunities, and responding effectively to customer needs and changes in market conditions.

This theory suggests that banks must continuously monitor the market landscape, analyze competitor strategies, and adapt their approaches to maintain or improve their competitive position (Asian Development Bank, 2022).

Banks can sustainably enhance their market share and profitability by aligning their offerings with market demands, analyzing customer preferences, and differentiating themselves from competitors.

In the banking sector, MBV encourages institutions to focus on market segmentation, product differentiation, branding, and customer relationship management to create customer value and gain a competitive edge. By identifying underserved market segments or unmet customer needs, banks can develop tailored products and services that meet specific customer requirements, enhancing customer satisfaction and loyalty.

MBV highlights the importance of being market-oriented and customer-centric in banking operations (Xu et al., 2024). By effectively leveraging market insights and responding proactively to market dynamics, banks can position themselves for long-term success and sustainable competitive advantage in the industry (Pu et al., 2024).

The triple bottom line theory highlights the significance of incorporating economic, social, and environmental outcomes in decision-making. It encourages banks to balance profitability with social responsibility and environmental sustainability. This holistic approach ensures that banks operate sustainably, benefiting both society and the environment (Wang & Li, 2024; Kubus, 2020; Pu et al., 2024; Caramichael & Rapp, 2024; Yousef Farhan, 2024).

Stakeholder theory advocates for managing relationships with various stakeholders, including customers, employees, communities, and regulators, to ensure sustainable business practices and long-term success. For banks, this involves engaging with stakeholders to enhance sustainability performance and competitive positioning (Chaudhuri et al., 2022; Drago et al., 2024; Cantero-Saiz et al., 2024; Kubus, 2020; Pu et al., 2024; ADB, 2022; Caramichael & Rapp, 2024; Yousef Farhan, 2024).

The circular economy theory promotes the efficient use of resources, waste reduction, and recycling to create sustainable value chains. In the banking sector, adopting circular economy principles can enhance green competitiveness by minimizing environmental impact and fostering innovation in sustainable practices (Wang & Li, 2024; Drago et al., 2024; Deslatte & Stokan, 2020).

Dynamic capabilities theory emphasizes the importance of adapting and innovating in response to changing environmental conditions, underscoring the need for flexibility and continuous improvement. By leveraging this theory, banks can stay competitive in green markets by developing and deploying new capabilities to tackle sustainability challenges (Chaudhuri et al., 2022; Kubus, 2020; Pu et al., 2024).

Corporate social responsibility (CSR) encourages organizations to take responsibility for their impact on society and the environment. For banks, integrating ethical practices into business operations and promoting transparency in environmental, social, and governance (ESG) practices can enhance asset quality and attract socially responsible investors, thereby supporting sustainable management and green competitiveness (Wang & Li, 2024; Agnese et al., 2024; Kubus, 2020; Caramichael & Rapp, 2024).

The theory of digital transformation emphasizes blending digital and human elements to achieve a competitive advantage. Strategies like using digital business dashboards (DBD) for customer engagement and relationship building are essential for long-term competitiveness and sustainability in the banking sector (Lóska & Uotila, 2023; Caramichael & Rapp, 2024; Yousef Farhan, 2024).

There has been a growing emphasis on the intersection of management theories and sustainability in recent years. Incorporating digital transformation strategies and blending digital and human elements have become crucial to achieving a competitive advantage in the banking sector. Strategies such as using digital business dashboards (DBD) for customer engagement and relationship building

are essential for long-term competitiveness and sustainability (Lóska & Uotila, 2023; Caramichael & Rapp, 2024).

Advanced econometric techniques, such as the generalized method of moments system Arellano–Bond estimator, help apply theoretical concepts practically. These techniques are used to understand the relationship between environmental, social, and governance (ESG) controversies and bank profitability. This approach highlights the importance of integrating sustainability factors into banking decision-making (Agnese et al., 2024).

Competitiveness theory focuses on analyzing the factors contributing to an organization's ability to outperform its rivals in the market. Key elements include analyzing industry dynamics, strategic positioning, innovation, operational efficiency, and customer value creation. Applying these principles helps banks enhance their competitive advantage and sustain long-term success (Caramichael & Rapp, 2024).

Visionary leadership, servant leadership, authentic leadership, and positive leadership are leadership approaches that contribute to sustainable business development by fostering a culture of innovation, ethical behavior, and long-term vision. In the banking sector, these leadership styles can drive the adoption of sustainable practices and enhance green competitiveness (Yousef Farhan, 2024).

This research applies RBV to highlight the role of internal capabilities in green banking strategies, while MBV explains how financial institutions respond to sustainability-driven market demands. The integration of the dynamic capabilities theory further emphasizes how banks can adapt to evolving environmental and regulatory landscapes, ensuring long-term competitiveness. The stakeholder theory reinforces the necessity to align sustainability efforts with diverse stakeholder expectations, making green competitiveness a multidimensional strategic priority.

This research integrates many theories, such as the stakeholder theory, the resource-based view (RBV), and the institutional theory, to present a governance model tailored to sustainable banking. By complementing governance theories with empirical data, this research bridges theoretical constructs with practical financial decision-making.

In conclusion, the evolution of management theories provides a comprehensive framework for banks to achieve sustainable management and green competitiveness. By leveraging these theories, banks can develop innovative strategies that balance economic performance with social responsibility and environmental sustainability, ensuring long-term success in an increasingly sustainability-focused market. The sustainable management category includes theories that emphasize long-term, environmentally responsible practices essential for sustainable organizational operations. For example, the theory of planned behavior and the

stakeholder theory focuses on fostering ethical practices, building robust stakeholder relationships, and promoting sustainable resource use, all of which are critical for sustainable management. The green competitiveness category highlights theories focusing on achieving a competitive advantage through environmentally concentrated strategies.

Theories such as Porter's five-forces model and the market-based view (MBV) theory guide organizations in assessing their competitive landscape to establish an eco-friendly market position, which is crucial for maintaining green competitiveness. Finally, some theories integrate elements of both sustainable management and green competitiveness.

For instance, the resource-based view (RBV) and the dynamic capabilities theory emphasize the strategic importance of leveraging internal resources and adaptability, supporting sustainability goals and a competitive edge. This categorization clarifies each theory's application, enabling a structured approach to understanding the roles of various management theories in simultaneously addressing sustainability and competitive advantage.

The chronological exploration of these management theories illustrates the critical role sustainable practices play in shaping decision-making processes within the banking sector. Integrating sustainable practices into the banking sector's management strategies is a pathway to enhanced competitiveness and a necessity in today's rapidly evolving market environment. By drawing on a rich body of theoretical insights, banks can develop robust, innovative, and sustainable approaches that meet the demands of their stakeholders and secure their long-term success.

This comprehensive approach aligns with the latest academic research and provides a robust framework for banks to navigate the complexities of sustainability in today's dynamic market environment. By leveraging these theoretical insights, banks can enhance their competitive advantage through sustainable management and green competitiveness. This positions banks as leaders in sustainability, driving positive change within the banking industry and beyond.

Incorporating theories such as the resource-based view, DC, MBV, and stakeholder theory enables banks to adopt a holistic view of sustainability. These theories offer a multidimensional analysis of how banks can integrate sustainability into their core operations, strategic planning, and stakeholder engagement.

The practical application of these theories facilitates the development of long-term strategies that prepare banks for future regulatory changes, market shifts, and evolving societal expectations. Banks can achieve significant competitive advantages by investing in human capital, promoting operational excellence through sustainable supply chain management, and engaging proactively with public policy.

The application of management theories in banking sustainability is not uniform; different financial institutions adopt varying strategic approaches based on organizational capabilities and market positioning. The resource-based view (RBV) underscores the importance of leveraging proprietary technologies and human capital to develop competitive green solutions.

Conversely, the market-based view (MBV) highlights the role of external demand in shaping green financial products, which raises concerns about whether sustainability is driven by genuine environmental commitment or mere regulatory compliance. The stakeholder theory suggests that banks achieving long-term green competitiveness tend to engage in deeper multi-stakeholder collaborations rather than implementing sustainability in isolation.

In a nutshell, sustainable management and green competitiveness are pivotal for the banking sector's future success. The integration of these principles not only ensures compliance with regulatory requirements but also enhances market positioning, stakeholder trust, and overall corporate sustainability. Banks can strategically apply these management theories to lead the banking industry toward a more sustainable and prosperous future.

The need to stay competitive in a rapidly changing market highlights the importance of incorporating sustainable practices into the management strategies of the banking sector. This requires a comprehensive approach grounded in a wealth of theoretical insights, enabling banks to create robust, innovative, and sustainable strategies that address stakeholder demands and secure long-term success.

The resource-based view (RBV) theory emphasizes the importance of innovation in achieving competitive advantage in 21st-century market conditions. Managers face numerous challenges, such as globalization, disruptive technologies, and environmental concerns. Strategic innovation, guided by RBV and the dynamic capabilities (DC) theories, is crucial for large businesses to maintain competitiveness and foster sustainable growth. RBV highlights the value of internal resources that are valuable, rare, non-substitutable, and inimitable, contributing significantly to a firm's competitive edge. Conversely, the market-based view (MBV) focuses on external market forces and systemic concepts influencing business strategies. This dual approach enables banks to harness internal strengths and external opportunities for strategic innovation.

1.4. Comprehensive Integration of Management Theories for the Dissertation Model

Based on a comprehensive review of theoretical frameworks, the following concepts are proposed for inclusion in the dissertation model for sustainable banking practices.

The resource-based view (RBV) theory offers a lens to understand how internal resources confer competitive advantages by emphasizing valuable, rare, non-substitutable, and inimitable resources. Banks can leverage their internal resources, such as expertise, technology, and talent, to implement and sustain effective sustainability practices.

The dynamic capabilities (DC) theory focuses on an organization's ability to integrate, develop, and reconfigure internal and external competencies to navigate changing environments. Banks can apply this theory by continuously innovating and refining their sustainability strategies, ensuring resilience and long-term growth by creating new products, services, and business models aligned with sustainability objectives.

Additionally, the market-based view (MBV) theory emphasizes the impact of the external market environment on firm performance and strategy formulation. Banks can use this theory to analyze market dynamics and consumer preferences, enabling the development of sustainable banking products and services that meet regulatory requirements and consumer demands, thereby enhancing their competitive positioning.

Finally, the stakeholder theory underscores the importance of considering the interests and influences of all stakeholders in decision-making. By engaging with and addressing the concerns of various stakeholders, including employees, customers, investors, and regulators, banks can build trust, enhance their reputation, and ensure that sustainability initiatives are comprehensive and widely accepted. This involves regular communication, stakeholder consultations, and incorporating feedback into sustainability strategies.

Table 1.3. organizes the framework components, integrating sustainable practices with theoretical perspectives and stakeholder engagement to achieve enhanced sustainability and competitive advantage in the banking sector.

The framework presented here integrates established theories and practices within sustainable banking. While each theory and practice component (RBV, DC, MBV, and stakeholder theory) is not new to the literature, synthesizing and integrating these elements into a comprehensive framework for sustainable banking practices could be considered new and creative.

While the dissertation develops a theoretical framework for sustainable management in banking, the research model represents a structured application of this framework, defining the interactions between sustainable management, green competitiveness, and key stakeholder influences.

By combining these theoretical pillars, the model captures both the internal dynamics and external drivers of sustainable performance. This dual perspective offers a robust foundation for strategic decision-making in banks aiming to lead in green competitiveness.

Table 1.3. Framework for integrating sustainable practices in banking

Sustainable banking framework		
Resource-based view (RBV) theory (internal focus)	Dynamic capabilities (DC) theory (adaptive focus)	Market-based view (MBV) theory (market focus)
Internal stakeholder engagement (employees, shareholders, and the board of directors)		
External stakeholder engagement (individual clients, SME clients, big corporate clients, and suppliers)		
Banking green product and service management		
Regulatory compliance and standards		
Sustainability metrics and performance assessment		
Integration of theories and practices		
Enhanced sustainability and competitive advantage in the banking sector		

By leveraging theories like RBV and DC, banks can strategically align their operational strategies with sustainable practices, thereby gaining a competitive edge in today's market where sustainability is increasingly valued. These theories provide a strong foundation for banks to create long-term strategies, effectively navigate regulatory changes, and meet evolving societal expectations. Strategic innovation, driven by dynamic capabilities, continuously enhances and transforms business models, ensuring resilience and sustained growth amid shifting market dynamics.

Exploring resource-based view (RBV) and dynamic capabilities (DC) theories offers a comprehensive framework for integrating sustainability into banking operations. By focusing on their unique resources and capabilities, banks ensure regulatory compliance, strengthen their market position, build stakeholder trust, and improve overall sustainability performance. Active engagement with public policy and a commitment to sustainable supply chain management are key elements of this approach, enabling banks to lead positive change within the banking sector and beyond.

While existing theoretical frameworks provide valuable insights into sustainable management, empirical evidence suggests that their effectiveness depends on the interplay between internal capabilities and external market forces. Banks that successfully integrate RBV principles demonstrate innovation in green finance but may struggle with regulatory compliance if market incentives are misaligned. Similarly, MBV-driven institutions may achieve short-term gains by responding to investor demand for ESG-friendly products, yet without embedding sustainability into their core operational strategies, such efforts may remain superficial. Therefore, a hybrid approach – merging internal resource optimization with market adaptability – is necessary to achieve long-term green competitiveness.

The integration of sustainable management and green competitiveness is indispensable for the future success of the banking sector. By embedding these principles within robust theoretical frameworks like RBV and DC, banks can ensure regulatory compliance, fortify their market position, and cultivate stakeholder trust. By strategically applying these theories, banks can lead the banking industry toward a sustainable future, catalyzing positive changes and achieving enduring success. The exploration of sustainability within banking provides a vital framework, shedding light on the intricate decision-making processes and factors that shape banks' sustainability strategies.

This framework enriches the analysis of sustainability challenges and offers pragmatic guidance for effectively addressing them. This adaptable framework empowers banks to tailor their sustainability programs to suit their unique needs, enhancing their relevance and effectiveness. Policymakers armed with these insights gain a nuanced understanding of the drivers behind sustainability efforts in banking, empowering them to craft targeted policies and incentives.

Moreover, this review enables banks to benchmark themselves against global sustainability standards, identifying strengths and areas for improvement. This holistic approach reinforces banks' commitment to sustainability and enhances their international competitiveness. Furthermore, it provides actionable strategies for seamlessly integrating sustainability into daily operations, positioning banks as trailblazers in environmental and social responsibility.

This marks a significant stride in advancing sustainable management within the banking sector, deepening the insight into how banks can champion environmental sustainability. Its insights serve as a beacon guiding us toward a greener, more sustainable global banking landscape.

In a nutshell, the dissertation integrates the resource-based view (RBV), dynamic capabilities (DC), market-based view (MBV), and the stakeholder theory to construct a robust model that supports the main objective: assessing and enhancing sustainable management practices in the banking sector to improve decision-making and green competitiveness. Each theory uniquely contributes to understanding how sustainability can be effectively embedded into banking practices, fostering competitive advantage and alignment with stakeholder expectations.

The resource-based view (RBV), as highlighted by Chaudhuri et al. (2022) and Drago et al. (2024), underscores the importance of utilizing valuable, rare, inimitable, and non-substitutable resources to create a competitive edge. Banks can develop and sustain effective, sustainable practices that differentiate them from competitors by focusing on internal assets such as technology and specialized human capital. This aligns directly with the dissertation objective of identifying impactful practices that can enhance banks' competitive positioning in sustainability-focused markets.

The dynamic capabilities (DC) theory further supports the objective by providing a framework for banks to adapt continuously to evolving regulatory and environmental demands. Drago et al. (2024) and Alhassan et al. (2024) suggest that such capabilities that encompass innovation and strategic flexibility enable banks to adjust their sustainability strategies effectively, thus achieving resilience in a shifting landscape. This adaptability is crucial for ensuring that sustainable management practices remain relevant and effective in influencing stakeholder decision-making, a core focus of the dissertation.

The market-based view (MBV) theory adds an external dimension by emphasizing how banks can leverage market insights to shape their sustainable practices, which align with consumer and regulatory expectations. According to Xu et al. (2024) and the Asian Development Bank (2022), MBV enables banks to enhance their green competitiveness by developing products and services that align with market demands for sustainability. This perspective is essential to the dissertation objective of crafting a model that meets internal operational goals and positions banks as leaders in green finance through strategic market alignment.

Lastly, the stakeholder theory underscores the importance of integrating stakeholder perspectives into sustainability strategies. As discussed by Chaudhuri et al. (2022) and the Asian Development Bank (2022), engaging diverse stakeholders, including employees, clients, and regulators, strengthens trust and enhances banks' reputations, making sustainable practices more widely accepted and impactful. This approach supports the dissertation goal of developing sustainable management practices that resonate with all key stakeholders, ensuring that banks' sustainability efforts are comprehensive and supported by those they impact.

Together, these theories provide a cohesive framework for achieving the dissertation's primary objective: a model that enables banks to implement sustainable management practices strategically, fostering green competitiveness while aligning with stakeholder needs and regulatory standards. Banks can create a resilient, competitive edge grounded in sustainable practices by aligning internal resources, adaptability, market responsiveness, and stakeholder engagement.

Furthermore, based on the findings presented in this chapter, the identified gap emphasizes the need for a deeper analysis of how various criteria and stakeholder dynamics collectively influence green decision-making processes within banks. While previous studies have touched upon aspects of green management and competitiveness, this research underscores different indices' interconnected and diverse weights in shaping green competitiveness. Moreover, the dissertation highlights the pivotal role of stakeholder perceptions, indicating a clear gap in existing literature concerning the stakeholder-centric approach to sustainable management in the banking industry. This perspective offers novel insights into green decision-making, particularly relevant in emerging markets like Lebanon,

and underscores the intricate relationship between sustainability and competitiveness.

Despite an increasing focus on sustainable management within the banking sector, the existing literature reveals significant gaps in how sustainable practices influence stakeholder decision-making and competitive positioning, particularly in emerging markets like Lebanon. Recent studies examine isolated aspects of green management, such as CSR or eco-initiatives (Kumar & Prakash, 2020; Xu et al., 2024), without presenting a cohesive framework that aligns these practices with diverse stakeholder priorities. Furthermore, while sustainable banking has seen considerable research within developed markets (Pu et al., 2024), few studies address banks' regulatory and operational constraints in developing economies (Rahman et al., 2023). Addressing these gaps, this research provides a comprehensive model integrating sustainable practices to strengthen the green competitiveness of banks across varied stakeholder groups and markets.

The dissertation aims to advance analysis through comprehensive indicators, emphasizing critical outcomes such as green management standards' impact on decision-making for internal and external stakeholders within the banking sector. It evaluates the significance of criteria such as green products, platform management, HR management, environmental management, and overall green management practices in banking institutions. Evaluating the sustainable trio, e.g., people, profit, and the planet, comprising the bank's reputation, banking returns, and ecological impact, will provide a holistic view of sustainability's influence on decision-making processes.

By addressing these gaps and integrating contemporary theories, this research enhances sustainable management practices, promoting environmental sustainability and fostering organizational success within the banking sector.

In addition to these gaps, current research on business competitiveness in sustainability faces several fundamental challenges. There is a notable lack of consideration for the interconnections among green competitiveness criteria, often resulting in fragmented approaches to sustainability assessment within the banking sector. Moreover, the relative importance of these criteria remains poorly understood, hindering the development of comprehensive evaluation frameworks. Integrating new, modern theories of sustainable management is essential to address these gaps effectively, as it can provide fresh insights into how environmental considerations impact organizational performance, particularly in banking.

Sustainable management in banking faces significant challenges that hinder progress toward greater environmental responsibility and competitiveness. This section of the dissertation identifies key gaps in existing research and highlights the critical need for advancements in both theoretical understanding and practical implementation. Here's a list of identified critical gaps in current research:

1. *Interrelatedness of green competitiveness criteria*. Previous research has often failed to explore how different criteria of green competitiveness within the banking sector are interconnected and influence each other. The findings underscore the need for a more integrated approach, considering the complex relationships among these criteria. For instance, while green products consistently emerge as important across stakeholders, analyzing how their importance varies concerning other criteria like environmental management is crucial for developing nuanced sustainability strategies.

2. *Stakeholder-centric approach.* The existing research extensively examines green management practices and their impact on banking sector competitiveness. However, a significant gap exists in analyzing how different stakeholders – internal (e.g., employees, management) and external (e.g., customers, regulators) – contribute to green decision-making processes within banks. The dissertation underscores the necessity to delve into stakeholder perceptions and their varying degrees of influence on sustainability strategies. This highlights a critical gap in the literature, which lacks a comprehensive stakeholder-centric perspective on sustainable management practices in banking. Addressing this gap is crucial for uncovering how diverse stakeholder interests shape and prioritize sustainability initiatives within banking institutions.

3. *Integration of contemporary theories.* There is a clear call for incorporating the latest theories of sustainable management into the model. Current research lacks a comprehensive framework that integrates these modern theories effectively with green competitiveness criteria. This integration is essential for enhancing the theoretical underpinnings of sustainable management practices and developing practical tools to guide the banking sector's decision-making toward more sustainable outcomes.

4. *The need for customizable evaluation models*. The findings underscore the inadequacy of current models in allowing businesses to customize weights for different green management criteria based on industry-specific and situational needs. A new model is urgently needed that not only facilitates the assessment of these criteria but also empowers banking organizations to adjust weights according to the relative importance of criteria in their specific context. This customization is crucial for overcoming the limitations of one-size-fits-all approaches and maximizing the effectiveness of sustainability initiatives.

Another underexamined area is the impact of sustainability-driven decision-making on financial risk mitigation. While existing studies suggest that ESG-integrated financial institutions exhibit lower default rates and reduced exposure to climate-related financial risks, there is limited empirical data on how such risk-reduction strategies translate into long-term competitive advantage. Future research should focus on quantifying the direct financial benefits of green banking beyond reputational gains.

Although implementing sustainable banking practices requires initial investments, long-term benefits include reduced regulatory costs, enhanced brand reputation, and increased operational efficiency. Case studies from European financial institutions indicate that green lending programs reduce credit risk and enhance profitability over time.

Therefore, the dissertation has highlighted several crucial gaps in the literature and practices of sustainable management within the banking sector, particularly in integrating environmental sustainability measures and developing competitive strategies aligned with sustainability objectives. These gaps present significant opportunities for further research and practical application. Addressing these gaps will enable future research to develop more advanced and practical frameworks that enhance environmental sustainability and strengthen the overall competitiveness of banking institutions. This research emphasizes the importance of creating economically viable and environmentally responsible strategies, ensuring the long-term success of banks while reducing their ecological footprint.

Furthermore, the dissertation underscores the need for a multidisciplinary approach encompassing economic, environmental, and social dimensions, fostering a holistic analysis of sustainability in the banking sector. Such an approach addresses the identified gaps and encourages innovative global solutions that banks can adopt. The integration of diverse perspectives will be crucial in developing strategies that are not only effective but also adaptable to the varying contexts in which banks operate.

Ultimately, by contributing to advancing these frameworks and strategies, this research aims to support the banking sector's journey toward a more sustainable and competitive future. The insights gained from this research will serve as a solid foundation for future explorations, encouraging scholars and practitioners alike to continue innovating and refining sustainable practices within the industry. As the banking sector evolves, this research will help ensure that sustainability remains at the forefront of its strategic priorities, guiding institutions toward long-term success and resilience.

Although sustainable management in the banking sector has garnered significant research attention, notable gaps remain, particularly in adaptable evaluation models. Many existing studies, such as those by Kumar and Prakash (2020) and Xu et al. (2024), have introduced general models for green management practices, focusing on specific areas like CSR and eco-initiatives.

However, these models often lack the flexibility to account for the diverse regulatory landscapes, operational contexts, and stakeholder priorities unique to each banking institution.

Additionally, research has concentrated mainly on developed markets, with limited attention to emerging markets such as Lebanon. Studies like Rahman et al. (2023) highlight the distinctive challenges these regions face, such as resource

limitations and complex regulatory environments, which underscore the need for a model that can be adapted to local contexts.

The dissertation adopts a stakeholder-centered approach based on universal management theories such as the stakeholder theory, the resource-based view (RBV), and sustainable management practices.

It aims to support effective decision-making and enhance green competitiveness in the banking sector. While the research focuses on the Lebanese context, the theoretical foundation is broadly applicable, offering practical insights for banks in both emerging and developed markets to align sustainability strategies with internal goals and external expectations.

1.5. Conclusions of the First Chapter and the Formulation of the Tasks of the Dissertation

This chapter explores gaps in the existing literature on green management practices within the banking sector, particularly how sustainable practices are integrated.

1. This chapter lays the groundwork for further research by identifying gaps in the literature and examining the relationship between green management, stakeholder decision-making, and competitiveness in the banking sector. Drawing from finance, management, and environmental studies, the chapter analyzes factors driving green competitiveness in banking and underscores the need for new models that assess sustainability criteria while allowing for customization based on institutional needs.
2. The theoretical framework is built on the resource-based view (RBV), market-based view (MBV), and dynamic capabilities (DC), combined with the stakeholder theory, to explore the intersection of sustainability, competitiveness, and management practices. Sustainable management in banking is highlighted as a key driver of long-term competitive advantage by streamlining operations, reducing costs, and improving compliance.
3. While the primary focus is on the banking sector, the findings offer insights that could be applicable across other industries, emphasizing the interconnectedness of people, economics, and the environment.
4. A comprehensive review of sustainable management practices reveals that, although areas such as green HR and environmental management have been widely studied, there is a notable gap in understanding their collective impact on stakeholder decision-making.

5. This research addresses this gap by integrating these diverse practices into a holistic framework that aligns with stakeholder priorities. This approach supports the core research objective of evaluating the effectiveness of sustainable management in enhancing banks' green competitiveness.
6. It also provides a foundation for addressing regulatory, operational, and environmental challenges, particularly in emerging economies.
7. The findings in this chapter establish a foundation for understanding how sustainable banking practices interact with stakeholder decision-making, which is further explored in the next chapter.

Therefore, the dissertation addresses the following tasks:

- To review the existing literature on sustainable management and green competitiveness in the banking sector to identify research gaps and critical sustainable management practices that influence decision-making and competitiveness and to develop a theoretical framework that establishes conceptual foundations while integrating hypothetical elements for validation.
- To evaluate the relationships between sustainable management practices and stakeholder decision-making in the banking sector using quantitative methods, selecting specific methods based on their alignment with the research objectives and requirements.
- To test and validate the developed model through empirical research and case studies, providing practical recommendations for banks to improve their sustainability strategies and competitive positioning.

Furthermore, the chapter emphasizes the necessity of developing a structured framework that enables banks to integrate sustainability into their core decision-making processes. By addressing the gaps in existing models, this research lays the foundation for a dynamic approach that considers stakeholder-specific sustainability priorities and adapts to diverse regulatory and market conditions. This perspective aligns with the dissertation's broader objective of offering practical insights that bridge the gap between theoretical sustainability models and real-world banking applications, ensuring green competitiveness and long-term financial resilience.

2

Quantitative Research Methodology Applied to Sustainable Management in Lebanese Banks

Building on the findings from the previous chapter, the Second Chapter further explores how banking institutions can enhance their competitive edge through sustainable management practices. The chapter identifies key aspects of sustainability that contribute to competitiveness within the banking sector, emphasizing the strategic importance of integrating environmental, social, and economic dimensions into core banking operations.

Moving beyond theoretical discourse, this chapter focuses on the practical implementation of sustainable management strategies within banking institutions. Insights from the First Chapter are translated into actionable management frameworks that banks can adopt to enhance operational efficiency, regulatory compliance, and stakeholder engagement.

A key feature of this chapter is its emphasis on the perspectives of both internal and external stakeholders in banking. The research model developed in this section builds on the foundational concepts introduced earlier, investigating the relationship between green management, stakeholder decision-making, and competitive positioning in the banking sector. The chapter also details the quantitative

methodology applied, including data collection, hypothesis formulation, and statistical analysis, to validate the model as a comprehensive framework for assessing sustainable banking practices.

Additionally, the chapter explores emerging ecological and social sustainability practices, establishing a foundation for future research and hypothesis development. The strategic integration of environmental considerations within banking is analyzed to highlight its role in enhancing competitive advantage.

A particular focus is placed on the Middle East, with an emphasis on Lebanon, offering a new dimension to the research. The research uses a detailed quantitative analysis of sustainable banking practices in this region to uncover insights tailored to the unique challenges and opportunities faced by banks operating in emerging markets. This targeted approach ensures that the findings are both relevant and applicable for institutions seeking to advance their sustainability efforts.

Overall, the Second Chapter represents a pivotal transition from theoretical exploration to practical application. It underscores the necessity of aligning academic research with real-world banking needs, providing a framework that strengthens the long-term resilience and adaptability of the banking sector.

Recent literature on green competitiveness in banking highlights a lack of empirical evidence linking sustainable management practices to competitive advantage. There is also a need for standardized tools to measure the long-term impact of sustainability on banking strategies and financial performance. While many banks are transitioning toward sustainable models, the strategic motivations and implications for stakeholders remain underexplored.

The dissertation investigates how banks integrate sustainability into their operations while balancing competing priorities. Special attention is given to the role of internal and external stakeholders in shaping sustainable decision-making. The research emphasizes the banking sector's potential to drive sustainable development by aligning financial strategies with environmental and social goals.

The Second Chapter explores how green management criteria influence stakeholder decision-making in the Lebanese banking sector, aiming to identify practices that enhance green competitiveness. The research evaluates five dimensions: green product management (GPM), green platform management (GPL), green HR management (GHR), environmental management (EMG), and green financial management (GFM). Using the analytic hierarchy process (AHP) and structural equation modeling (SEM) via AMOS software, the chapter identifies and prioritizes the most impactful sustainability practices within the banking industry. Two publications were published on the topic of this chapter (Tvaronavičienė & Nassar, 2021b; Nassar & Tvaronavičienė, 2023)

2.1. Criteria for Evaluating Sustainable Management in the Lebanese Banking Sector

The indicator system established in the dissertation is grounded in a recent systematic literature review, ensuring a robust and research-informed approach to assessing sustainable management practices in the banking sector. The development process is structured into three key stages.

The first stage involved conducting a comprehensive literature review to define the criteria essential for constructing the dissertation model. This review provided a foundation for identifying relevant sustainability dimensions and management strategies that enhance green competitiveness in banking.

The second stage built on these theoretical insights and focused on integrating fundamental management theories into a cohesive framework.

The final stage involved compiling a detailed list of 40 management subcriteria derived from the literature review. These sub-criteria were carefully selected to reflect critical aspects of sustainable management, ensuring that the indicator system effectively measures and prioritizes sustainability initiatives in banking institutions.

This structured approach ensures that the indicator system is firmly grounded in current research and theoretical foundations. By aligning sustainability assessment with well-established management frameworks, the system supports the advancement of sustainable practices and green competitiveness within the banking sector.

Furthermore, the methodological foundation of the dissertation is grounded in a positivist philosophical orientation supported by objectivist epistemology and realist ontology. A deductive research approach is adopted to extend and test established management theories – including the stakeholder theory, the resource-based view (RBV), the institutional theory, and the dynamic capabilities theory – within the context of the Lebanese banking sector.

Quantitative methods form the core of the empirical investigation. Specifically, structural equation modeling (SEM) is used to examine theoretical relationships, while multi-criteria decision-making (MCDM), through the analytic hierarchy process (AHP), is applied to assess stakeholder-driven priorities in sustainable management. While the research remains anchored in positivism, qualitative elements are used in a supportive role to enhance the interpretation of quantitative findings.

This methodology ensures theoretical rigour, empirical robustness, and contextual relevance for sustainable banking practices in emerging markets.

Before addressing the green hypotheses (1–6), it is essential to recognize that green management in banking involves strategic sustainability practices across

multiple departments. Rooted in the stakeholder theory and the planet–profit–people framework, these initiatives shape and are influenced by internal and external stakeholders.

Table 2.1. A systematic approach for developing comprehensive indicators

A systematic approach for developing comprehensive indicators	Description	Outcome
Step 1	Conducted literature review to define criteria	Identified key criteria for "sustainable management leading to green competitiveness"
Step 2	Extracted important theories for sustainable banking	Integrated theories into the "framework for integrating sustainable practices in banking"
Step 3	Listed 40 management sub-criteria from the literature review	Detailed criteria are provided and explained in an appendix

In the context of the conducted research, this theory is applied to assess how these stakeholder decision-making processes align with sustainability goals, specifically through the lenses of environmental impact (planet), banking performance (profit), and social responsibility (people).

The first criterion, "environmental support (DM1 – Planet)," will be detailed first. This criterion reflects the concerns of stakeholders who prioritize environmental sustainability. These stakeholders are influenced by the bank's commitment to reducing its ecological footprint, adopting green technologies, and promoting environmentally friendly products and services. Employees engaged in sustainability initiatives, customers preferring green banking products, and regulators enforcing environmental laws are key drivers in this area. The decision-making of these stakeholders is guided by the bank's ability to demonstrate tangible environmental benefits, such as reduced carbon emissions or sustainable resource use. Therefore, a stakeholder might choose to engage with Bank X over Bank Y due to the presence of sustainability criteria in Bank X that are lacking in Bank Y.

Another criterion that stakeholders might consider in their decision-making is the "profit concern (DM2 – Profit)". Stakeholders concerned with profit are primarily focused on the economic viability and banking returns of the bank's sustainability practices. This includes shareholders, banking managers, and customers seeking profitable investments and products that align with sustainability principles. The dissertation highlights how profit-driven stakeholders assess the cost-effectiveness of green investments, the potential for market growth in green

sectors, and the overall impact of sustainable practices on the bank's banking performance. These stakeholders support sustainable initiatives that enhance the bank's profitability and long-term banking stability.

The Third criterion is related to the "reputation concern (DM3 – People)". This criterion emphasizes the importance of maintaining and enhancing the bank's reputation as a socially responsible and environmentally conscious institution. Stakeholders prioritizing reputation are concerned with how the public, media, and industry peers perceive the bank's sustainability efforts. This includes customers, the general public, regulators, and non-governmental organizations that monitor corporate behavior. Decision-making in this area is influenced by the bank's ability to effectively communicate its sustainability efforts, manage public relations, and demonstrate leadership in corporate social responsibility.

The dissertation draws on the latest literature to support these concepts, integrating findings from recent studies examining stakeholder engagement's role in sustainable management. The literature review provides a comprehensive overview of how various stakeholder groups prioritize different aspects of sustainability based on their unique interests. For instance, recent research highlights how employees may focus on internal green practices, such as energy efficiency and waste reduction, while customers and regulators may be more concerned with the bank's external impact on the environment and society.

Furthermore, the dissertation emphasizes the interconnectedness of these decision-making criteria, noting that stakeholders often weigh these concerns simultaneously. For example, a stakeholder may prioritize environmental sustainability but will also consider the banking implications and the impact on the bank's reputation. This multifaceted approach to decision-making is critical in guiding the bank's strategy toward green competitiveness.

In a nutshell, the dissertation underscores the vital role of stakeholder decision-making in shaping sustainable management practices within the banking sector. By aligning stakeholder decision-making with the trio of sustainability, e.g., the planet, profit, and people, the bank can effectively navigate the complex demands of sustainability and achieve a competitive edge in the banking market.

HYPOTHESES 1: Green product management (GPM)

H1– Green product management positively influences a bank's stakeholder decision-making in the banking sector.

H1 posits that green product management positively influences a bank's stakeholder decision-making, particularly in their choice to engage with one bank over another, preferring a bank that offers greener products. This decision-making process underscores stakeholders' growing emphasis on sustainability, prompting banks to develop and provide products that align with environmental goals. As stakeholders gravitate toward banks prioritizing green product offerings, these

banks enhance their competitive positioning by meeting the demand for sustainable banking solutions.

As stated before, green product management refers to the ecologically conscious management of the subsequent banking products; therefore, here are the detailed sub-criteria based on a recent literature review.

C11 – *The green mortgage* is a loan that is intended only for sustainable buildings (Streimikiene & Kaftan, 2021). The bank would incentivize the borrower with either a reduced interest rate or an increased loan amount (Agnese et al., 2024) to encourage the purchase of an environmentally friendly building or the renovation of an already existing one to be more eco-friendly (Wang et al., 2021).

C12 – *Green home modernization loans* are designed to help homeowners finance energy-efficient upgrades, such as installing solar panels, improving insulation, and modernizing heating systems (Abdelfattah et al., 2024). These loans promote sustainability by reducing energy consumption and lowering utility bills while potentially increasing property value (Manolas et al., 2017).

Often offered with favorable terms and incentives, these loans support individual banking benefits and broader environmental goals, making it easier for homeowners to adopt green technologies and contribute to a more sustainable future (Yuan & Gallagher, 2018).

C13 – *Sustainability-linked loans (SLLs)* are innovative banking instruments that tie the cost of borrowing to a borrower's achievement of specific environmental, social, and governance (ESG) performance targets (Bilan et al., 2019). These loans allow consumers to pay variable interest rates based on their success in meeting pre-established ESG goals, verified by an independent ESG rating agency or a third-party verifier (Battiston et al., 2017). In essence, a sustainability-linked loan connects the borrower's sustainability performance to banking incentives, such as reduced interest rates, if specific ESG criteria are met (Wang & Zhao, 2022). While many of these targets typically focus on environmental aspects, such as reducing CO2 emissions or lowering water usage (International Finance Corporation (IFC), 2014), SLLs increasingly include objectives within the social and governance categories (Yan & Gong, 2024). Examples of these targets might include increasing employee training hours or raising the percentage of women in management positions (Shlikhter, 2020). By linking banking terms to sustainability outcomes, SLLs encourage borrowers to integrate sustainable practices into their operations, aligning banking performance with broader societal and environmental goals (Drago et al., 2024). Others highlight that honesty, excellent communication skills, technological expertise, smartness, and patience are crucial for achieving sustainable banking services and improving employee productivity and retention (Azizzadeh et al., 2022).

C14 – *Green debit/credit cards* go beyond traditional banking products by integrating environmental responsibility into everyday transactions (Duffett et al., 2018). Consumers reduce their reliance on new plastic materials by choosing these cards and actively participating in global reforestation efforts (Shkodina et al., 2019). Additionally, these cards offer insights into spending patterns, helping users make informed decisions that align with their commitment to sustainability (Alshebami, 2021).

C15 – *Green reward systems* (e.g., Green Golden Points) are designed for the client who can utilize their accumulated green points to make purchases and redeem them toward the support of the environment or the acquisition of eco-friendly products (Iqbal et al., 2018). Another illustration is allocating a portion of the card cost toward endorsing eco-friendly initiatives (Sukirman, 2018), like afforestation or other sustainable pursuits (Ali et al., 2022).

C16 – *Low-charge insurance premium for sustainable practices* is an incentive to promote sustainable practices among consumers by offering reduced banking charges or premiums. This initiative explicitly targets using electric or hybrid vehicles and choosing recycled parts for vehicular damage repairs (Duffett et al., 2018). By lowering costs for customers who engage in these environmentally friendly actions, banks encourage the adoption of sustainable practices but also align their banking products with broader environmental goals (Asian Development Bank, 2022). This approach reinforces the bank's commitment to sustainability by rewarding customers for making eco-conscious choices, thereby fostering a more sustainable economy (Junge, 2019). The low-charge premium is a practical example of how green banking can integrate banking incentives with environmental responsibility, driving consumer behavior and the bank's sustainability agenda forward (Bag et al., 2020).

HYPOTHESES 2: Green platform management (GPL)

H2 – Green platform management positively influences a bank's stakeholder decision-making in the banking sector.

H2 posits that green platform management positively influences a bank's stakeholder decision-making, particularly when they choose to deal with one bank over another, favoring a greener bank over a less green one. This decision-making process reflects the stakeholder preference for sustainability, which drives banks to align their strategies with environmental and social goals. As stakeholders increasingly prioritize greener options, banks that effectively manage their platforms to support sustainability gain a competitive advantage by attracting and retaining these stakeholders.

The initial definition of GPL encompasses all the subsequent terms used to characterize green platform management. The detailed sub-criteria are based on a recent literature review (Table 1.1).

C27 – *Digital finance* (as digital banking). The transition from traditional banking methods to digital banking has revolutionized how customers interact with banking institutions, enabling them to access a wide range of services online through laptops or mobile devices (Iqbal et al., 2018). This shift offers unparalleled convenience, allowing users to perform transactions, manage accounts, and access banking products anytime and anywhere, thus reducing the need for physical branch visits (Igbudu, Garanti, Popoola et al., 2018). Additionally, digital banking enhances operational efficiency for banks by streamlining processes and reducing overhead costs while providing customers with personalized and real-time banking solutions (Ellahi et al., 2021).

C28 – *ICT skills* refer to the ability of bankers to effectively understand, utilize, and implement various technological software and tools essential for modern banking operations (Pu et al., 2024).

This skill set is crucial as it enables bankers to optimize digital platforms, enhance service delivery, and improve customer interactions by leveraging advanced technologies (International Telecommunication Union (ITU), 2014). Proficiency in ICT supports the efficient management of banking transactions and data and drives innovation within the banking sector, enabling institutions to stay competitive in a rapidly evolving digital landscape (Caruso, 2018). Moreover, it facilitates the integration of new technologies, such as fintech solutions, into traditional banking systems, ensuring that banks can meet the increasing demands for digital banking services (Ardizzi et al., 2019).

C29 – *ICT management.* Effective ICT management in banking involves integrating and overseeing various technological systems critical to modern banking operations (Katta et al., 2019). This includes managing contacts or call centers, automated clearing house systems, electronic fund transfer (EFT) mechanisms, online customer information bases (CIB), core banking solutions (CBS), and corporate intranet systems (Kodama, 2017). These technologies collectively enhance banking services' efficiency, security, and responsiveness, enabling institutions to streamline operations and improve customer experience (Arezki et al., 2017). By leveraging such ICT infrastructures (Manigandan et al., 2024), banks can facilitate seamless transactions, ensure real-time data processing, and support comprehensive banking management, thereby maintaining a competitive edge in the digital economy (Seyfang & Gilbert-Squires, 2019).

The positive impact of ICT on green competitiveness was outlined in previous research (Tvaronavičienė & Nassar, 2021b). Now, the correlation between banking and organizational performance is explored from a stakeholder-centric perspective.

C210 – *Fintech development* involves the work of banking technology app developers who design and create innovative applications to simplify and enhance

how users manage their banking tasks (BLOM Bank SAL, 2020). These developers focus on building apps that make it easy to pay bills, transfer funds, and handle various other banking activities directly from a smartphone or computer (Makarchenko et al., 2016). By leveraging cutting-edge technology, fintech apps provide users with convenient, secure, and efficient tools to manage their finances on the go, thereby revolutionizing the banking services landscape and driving the shift toward a more digital and user-friendly banking ecosystem (Flögel & Beckamp, 2019; Caramichael & Rapp, 2024).

C211 – *R&D green innovative activities*. Banking institutions are increasingly adopting robotic process automation (RPA) as part of their green innovative activities, leveraging this technology to reduce operational costs, eliminate human error, and enhance overall efficiency (Khvesyk et al., 2018). RPA is a key banking trend that contributes to superior customer service by automating routine tasks (Oduor et al., 2017). Alongside RPA, top banking technology trends include predictive AI, robotic services, and the growing consumer demand for digital transactions in the metaverse (Stock et al., 2018). As banks plan for the future, these technologies are integral to their strategies (Caruso, 2018). Additionally, R&D in green innovation extends to enhancing services (Wang et al., 2018) such as ATM locations, bill payment alerts, interbank and intrabank payments, and other essential banking functions, all aimed at improving sustainability and customer experience (Fajar & Soeling, 2017).

C212 – *Mobile /SMS banking.* Mobile banking, mainly through SMS banking, represents a significant advancement in the banking services sector, allowing banks to deliver seamless and real-time communication with customers (Galletta et al., 2024). SMS banking enables banking institutions to send notifications, alerts, and important updates directly to customers' mobile phones via SMS messaging (Makarchenko et al., 2016). Additionally, this service empowers consumers to execute various banking transactions, such as checking account balances, transferring funds, and making payments, all through simple text messages(Asongu & Biekpe, 2018). This form of mobile banking enhances accessibility and convenience, ensuring that customers can manage their finances efficiently, regardless of location, further integrating technology into everyday banking operations (Asongu & Odhiambo, 2019).

C213 – *Online payment gateway service.* An online payment gateway service is a crucial network that banks provide to facilitate the secure transfer of funds for their customers (Cantero-Saiz et al., 2024). Like point-of-sale terminals in physical stores, payment gateways enable customers to complete online transactions (Nevárez & Féliz, 2019). This service requires effective collaboration between customers and businesses, ensuring that transactions are processed efficiently and securely (Ranjan & Hussain, 2016). By offering robust payment gateway services,

banks enhance the convenience and security of online banking transactions, supporting the growing demand for digital commerce and streamlining the payment process for consumers and merchants (Martins et al., 2019).

C214 – *Express cash system* encompasses any cash withdrawals a cardholder makes using their card and PIN at an ATM, through "cash access" or other authorized methods (Xu et al., 2024). These transactions are considered part of the express cash system and are typically subject to a "cash withdrawal fee," as outlined in the bank's schedule of fees (Maitre et al., 2018). This system allows for convenient access to cash, with the potential for reduced or waived fees for customers who frequently use the service (Rosendal et al., 2024). However, suppose customers do not take advantage of the express cash system. In that case, they may incur additional costs when making withdrawals at a bank counter, highlighting the system's role in promoting cost-effective cash access for cardholders (Song et al., 2019; Cantero-Saiz et al., 2024).

C215 – *SWIFT system*, e.g., the system of the Society for Worldwide Interbank Banking Telecommunications, is a global messaging network that operates as a cooperative owned by its member institutions, including banks and other banking entities (International Telecommunication Union (ITU), 2014). SWIFT is primarily used to securely and efficiently transmit information, mainly instructions for transferring funds across borders (Duffett et al., 2018). This system is critical in facilitating international banking transactions by ensuring that messages and payment instructions are communicated reliably and quickly between member institutions (Kodama, 2017), thereby supporting the seamless execution of global banking operations (Seyfang & Gilbert-Squires, 2019).

C216 – *Technical assistance (TA)* – a banking mechanism that supports preparing, financing, and executing development projects and programs. It assists member countries in honing their capacities and maximizing the utilization of their development resources (Katta et al., 2019; Flögel & Beckamp, 2019). Technical assistance (TA) can be provided to government administrations or institutions, categorized into transaction TA (TRTA), which supports project implementation and capacity building, and knowledge and support TA (KSTA), which focuses on capacity building, policy recommendations, and research, without direct ties to specific funded projects (Asongu et al., 2019; Martins et al., 2019; Ardizzi et al., 2019).

The proliferation of digital technology fosters competition and enhances economic competitiveness (Yousef Farhan, 2024). Adopting digital banking poses novel systemic risks to banking stability and credibility, amplifying the risks of cybersecurity, fraud, and ethical dilemmas – a critical peril of business transformation in this domain (Shkodina et al., 2019; Chaudhuri et al., 2022).

HYPOTHESES 3: Green human resources management (GHR)

H3 – Green human resources (GHR) management positively influences a bank's stakeholder decision-making in the banking sector.

H3 posits that green human resources management positively influences a bank's stakeholder decision-making, particularly in their choice to support or engage with one bank over another. Stakeholders are increasingly drawn to banks that demonstrate a commitment to sustainability through their HR practices, such as hiring, training, and developing a workforce that prioritizes environmental and social responsibility. As stakeholders favor banks with strong green HR management, these banks gain a competitive edge by aligning their internal practices with the growing demand for sustainability.

The detailed sub-criteria are based on a recent literature review (Table 1.1).

C317 – *Green human skills by green awareness* refer to the essential competencies, talents, values, and attitudes needed to thrive in, contribute to, and champion a sustainable and resource-efficient society (Deslatte & Stokan, 2020). These skills are developed through green awareness initiatives, which educate individuals on the importance of sustainability and equip them with the knowledge and abilities to implement environmentally responsible practices (Arulrajah & Opatha, 2016). By fostering green human skills, organizations can empower their workforce to support and drive sustainable development goals, ensuring that their operations align with broader environmental and societal objectives (Bag et al., 2020).

C318 – *Green training* involves equipping employees with the knowledge, skills, and methods necessary to implement efficient work practices that prioritize proper resource utilization, waste reduction, energy conservation, and the mitigation of environmental degradation (Zaid et al., 2018). This practice is essential for fostering a workforce supporting the organization's sustainability goals and environmental management systems (Nevárez & Féliz, 2019).

C319 – *Green human management by green recruitment* focuses on attracting and hiring individuals who are not only skilled and qualified but also deeply committed to environmental sustainability (International Labour Office (ILO), 2018). This approach ensures new employees align with the organization's environmental values and contribute positively to its sustainability goals (Alhassan et al., 2024). By integrating green principles into the recruitment process, organizations can build a workforce knowledgeable about sustainable practices and motivated to implement and advocate for environmentally responsible behavior (Fajar & Soeling, 2017). This strategic alignment between human resource management and sustainability efforts strengthens the organization's overall commitment to green initiatives and promotes a culture of environmental sustainability from the ground up.

C320 – *Green expertise* encompasses quality assurance, environmentalism, and sustainable development as the core competencies. These specialized skills

and knowledge are essential for guiding banks to transform their operations and align with sustainability goals. Banks leverage green expertise to ensure that their practices meet high standards of environmental responsibility, support sustainable growth, and effectively contribute to the broader objectives of environmental sustainability and corporate social responsibility (Zhixia et al., 2018). This expertise is crucial in helping banking institutions navigate the complexities of sustainable transformation (Ali et al., 2022), enabling them to achieve long-term success in a rapidly evolving, eco-conscious market (Okyere-Kwakye & Md Nor, 2021).

HYPOTHESES 4: Environmental management (EMG)

H4 – Environmental management positively influences a bank's stakeholder decision-making in the banking sector.

H4 posits that environmental management positively influences a bank's stakeholder decision-making, particularly in their choice to engage with one bank over another, favoring a bank that demonstrates strong environmental stewardship. Stakeholders increasingly prefer banks that actively manage their environmental impact, driving these institutions to adopt practices that align with sustainability goals. By choosing banks that excel in environmental management, stakeholders help these institutions gain a competitive advantage by responding to the demand for environmentally responsible operations.

The detailed sub-criteria are based on a recent literature review (Table 1.1).

C421 – *Energy saving.* A bank can earn recognition for its minimal energy consumption due to the innovative use of light-emitting diodes (LEDs) for interior and exterior lighting. LEDs played a crucial role in achieving this designation, with the only traditional lighting element being a high-output fluorescent tube used in the monument sign. The bank thoroughly evaluated LED lighting for all its signage, emphasizing its commitment to energy efficiency (Kim & Chiang, 2017).

C422 – *Paperless banking* is an office that relies on electronic documents over paper-based operations. Numerous offices and departments cannot eliminate paper records due to procedural or regulatory limitations; hence, certain firms opt for the term "paper-light."

Reducing paper usage speeds up a company's digital transformation. This typically involves transitioning to an electronic document management system that digitizes documents and stores them in a centralized repository (Makarchenko et al., 2016). For instance, using the backs of photocopied pages, recycling paper, reusing envelopes, and repurposing files can help cut printing and storage costs (International Labour Office (ILO), 2018).

C423 – *Refusing the support of polluting businesses*. In line with their commitment to sustainability and environmental responsibility, some banks refuse to support companies that engage in environmentally harmful practices (Nevárez &

Féliz, 2019). This includes denying loans and credit facilities, opening company accounts for businesses involved in significant pollution, or failing to comply with environmental regulations (Yadav et al., 2024). By taking this stance, banks reduce their environmental footprint and encourage broader corporate responsibility, steering industries toward more sustainable and eco-friendly practices. This approach aligns banking activities with sustainable values, reinforcing the bank's role as a catalyst for positive environmental change (Okyere-Kwakye & Md Nor, 2021).

C424 – *Using renewable energy* encompasses a variety of clean energy sources that are naturally replenished and have a minimal environmental impact (Sukirman, 2018). They include solar energy, harnessed from the sun; wind energy, generated by wind turbines; hydro energy, derived from the flow of water; biomass energy, produced from organic materials; tidal energy, generated by the movement of ocean tides; and geothermal energy, sourced from the heat within the earth (International Labour Organization, 2018). Utilizing these renewable energy types helps reduce reliance on fossil fuels, lowers greenhouse gas emissions, and promotes a more sustainable and resilient energy system (Shlikhter, 2020).

C425 – *The green annual report* is an ecologically sustainable version of a company's banking report, produced with a strong focus on conserving energy, water, and trees and minimizing waste and greenhouse gas emissions (Zhan et al., 2018). This report details the company's banking performance and highlights its environmental impact and sustainability initiatives (Kumar & Prakash, 2019). A green annual report's production process adheres to eco-friendly practices, ensuring that the report's creation aligns with the company's broader commitment to environmental sustainability (Zhixia et al., 2018). Additionally, the content often includes an overview of the company's activities and practices that promote sustainability, further reinforcing its dedication to green principles (World Bank Group, 2018).

C426 – *Green community activities*. Banks increasingly take proactive steps to foster eco-friendly impacts within their communities (Song et al., 2019). These initiatives include installing biogas plants, planting trees, and engaging in other environmental preservation efforts (Gü Ner, 2018). By adopting roads or parks, planting community gardens, or sponsoring events that promote sustainable practices, banks demonstrate their commitment to environmental sustainability (Kokkonen & Ojanen, 2018).

These activities contribute to the community's well-being and enhance the bank's role as a responsible corporate citizen, actively participating in preserving and improving the environment (Sharma & Choubey, 2022).

C427 – *People's green awareness and orientation programs*. Banks and organizations increasingly offer free green awareness initiatives to educate the public on environmental issues and sustainable practices (Alshebami, 2021). These

programs include webinars, events, and training sessions designed to raise awareness about eco-friendly behavior (Zhixia et al., 2018). Additionally, green awareness campaigns are integrated into popular activities such as marathons and football events, where participants can engage in educational sessions or receive information on adopting more sustainable lifestyles (Zaid et al., 2018). These efforts are crucial in fostering a broader analysis of environmental responsibility and encouraging individuals to incorporate green practices into their daily lives (Ellahi et al., 2021).

C428 – *Collaboration with other sectors/organizations for yearly green goals*. Banks increasingly collaborate with diverse, green-focused entities to achieve annual sustainability objectives. This includes partnerships with non-banking green industries, such as renewable energy companies and sustainable agriculture firms, as well as green charities and environmental associations. Additionally, banks are joining forces with other green banks and banking institutions to pool resources, share best practices, and drive collective progress toward shared environmental goals (Shlikhter, 2020). These collaborations are essential for amplifying the impact of green initiatives, fostering innovation in sustainable practices, and ensuring that banking institutions play a leading role in the global transition to a more sustainable economy.

C429 – *Green campaigns* are launched by banks to promote sustainability and encourage eco-friendly projects. These campaigns include green awareness advertisements on the bank's platforms, such as websites and mobile apps, and within bank branches. Additionally, banks utilize social media to spread green promotions, reaching a wider audience and engaging customers in environmental initiatives. Green marketing efforts extend to television ads, in-branch displays, and green slogans, all designed to reinforce the bank's commitment to sustainability and inspire customers to participate in green projects (Park & Kim, 2020). These campaigns are crucial in building a strong brand association with environmental responsibility and driving customer involvement in green initiatives.

HYPOTHESES 5: Green financial management (GFM)

H5 – Green financial management on a bank's stakeholder decision-making in the banking sector.

H5 posits that green financial management positively influences a bank's stakeholder decision-making, particularly in their choice to engage with one bank over another and favoring a bank that manages its finances to support sustainability. Stakeholders are increasingly inclined to choose banks that integrate green banking practices, such as sustainable investments and responsible lending. This preference drives banks to align their banking strategies with environmental and social goals, giving them a competitive edge by attracting stakeholders who value sustainable banking management.

The detailed sub-criterion is based on a recent literature review (Table 1.1).

C530 – *Green venture capital* involves investing in startups and venture firms pioneering innovations in sustainable technology (Konuk et al., 2015). Venture capital (VC) refers to the banking support provided to small or newly established companies with solid growth potential (Battiston et al., 2017). A venture capital fund is a private equity investment vehicle supported by institutional and private investors, such as investment banks, insurance companies, and pension funds (Makarchenko et al., 2016). By focusing on sustainable tech, green venture capital plays a crucial role in fostering the growth of environmentally responsible businesses, driving innovation, and contributing to a more sustainable economy (Wang et al., 2018).

C531 – *Green private equity funds* involve allocating resources to investment funds that prioritize backing sustainable projects (Lin et al., 2017). Like mutual or hedge funds, a private equity fund pools capital from multiple investors to make strategic investments on behalf of the fund (Arezki et al., 2017). A "green fund" or equivalent banking instrument specifically channels these investments into companies that are socially responsible or actively engaged in promoting environmental sustainability (Caruso, 2018). By investing in such funds, investors contribute to the growth of enterprises that align with environmental sustainability and sustainable development goals, thereby supporting the broader transition to a more sustainable economy (Masud, Hossain et al., 2018).

C532 – *Green brokerage* services facilitate sustainable investments by executing trades of green bonds and carbon credits on behalf of clients (ING, 2018). These services enable investors to direct their capital toward environmentally friendly banking instruments, such as green bonds, which fund projects with positive environmental impacts, and carbon credits, which support initiatives aimed at reducing greenhouse gas emissions (Wang et al., 2020). By offering these brokerage services, banking institutions help clients align their investment portfolios with sustainability goals, promoting the growth of eco-conscious markets and contributing to global environmental efforts (Akomea-Frimpong et al., 2022).

C533 – *Green bonds*. Banks can play a pivotal role in expediting the market for green bonds and carbon credits by utilizing their accounts to facilitate the buying and selling of these sustainable banking instruments (Yan & Gong, 2024). Green bonds, which are debt securities issued to finance or refinance environmentally beneficial projects, and carbon credits, which support the reduction of greenhouse gas emissions, are key tools in promoting sustainability. By offering services that streamline transactions in these markets, banks help to accelerate the adoption of green investments and contribute to the growth of environmentally responsible finance (Akomea-Frimpong et al., 2022).

Green bonds fall under the fixed-income securities category, including instruments like commercial paper, certificates of deposit (CDs), government

bonds, treasury bonds, municipal bonds, and treasury inflation-protected securities (TIPS). These instruments serve as lending tools, providing stable returns to investors (Flögel & Beckamp, 2019). On the other hand, equity investments involve purchasing shares, granting the investor a stake in a company's ownership. Equity investments can generate returns through dividends and capital gains (Sampurna Panigrahi et al., 2019). By facilitating green fixed-income securities and equity investments, banks support the transition to sustainable finance, helping investors contribute to environmental goals while potentially achieving banking returns.

Integrating green bonds and carbon credits into banking services underscores a broader shift toward green competitiveness, where banking institutions leverage advanced technologies and digital banking platforms to strengthen their sustainable practices (Shlikhter, 2020). Collaborating with Fintech and prioritizing green initiatives are crucial strategies for banks to maintain a competitive edge in the evolving banking landscape.

HYPOTHESES 6

H6 – Stakeholder (internal and external) decision-making positively influences green competitiveness in the banking sector.

H6 posits that a bank's stakeholder decision-making, whether internal or external, positively influences green competitiveness in the banking sector. When stakeholders prioritize sustainability in their choices, such as opting for banks with strong green credentials, they drive these institutions to enhance their green competitiveness. This collective push from stakeholders encourages banks to adopt and improve sustainable practices, ultimately giving them a competitive advantage in a market that increasingly values environmental and social responsibility.

Green management in a bank can have a substantial impact on the decision-making of internal and external stakeholders. Adopting environmentally responsible practices and sustainability efforts can have various effects on different stakeholders.

Based on a recent literature review, here is the designation of "internal and external stakeholders" (Table 1.1.).

Internal stakeholders:

C634 – A1: *Employees*, e.g., all bank employees, such as bank tellers, branch managers, loan processors, mortgage consultants, investment representatives, credit analysts, investment bankers, and relationship managers, are part of the decision-making process (Sukirman, 2018) (Abdelfattah et al., 2024).

Employees may derive their decisions from certain managerial practices established by the bank (Khan, 2019; Ali et al., 2022; Francis et al., 2019; Rubel et al., 2020).

C635 – A2: *Shareholders* are of two major types: equity shareholders and preference shareholders. Both have specific rights and obligations toward the company (Kumar & Prakash, 2019).

Shareholders do not have to be employees or directors or work for the business. They are investors in the company. Investors can rely on certain managerial practices the bank implements for decision-making (Asongu et al., 2019). The role of shareholders on the board of directors is conditional. While all board members are shareholders, not all shareholders automatically hold a position on the board. Typically, shareholders who own a significant percentage of the company's shares, often ten percent or more, are eligible to serve on the board. Shareholders exert influence over the company primarily through their voting rights, which grant them the authority to participate in major corporate decisions. This influence extends to shaping the company's strategic direction.

The dissertation examines the impact of green strategies on shareholder behavior, particularly whether sustainability-driven management practices influence shareholders' investment decisions. Specifically, it explores the possibility of shareholders shifting their investments to other banks based on the extent to which institutions integrate environmentally sustainable management approaches (Yuan & Gallagher, 2018; J. Wang et al., 2020; Nevárez & Féliz, 2019; Bag et al., 2020).

C636 – A3: *The board of directors* is the chair, vice chair, board members, the secretary, and the treasurer.

The role of a treasurer involves overseeing the organization's treasury, focusing on core functions like cash and liquidity management, risk management, and corporate finance. Simultaneously, a board secretary monitors organizational activities to ensure alignment with bylaws. If a bank lacks a green management strategy, the board of directors, influenced by its commitment to environmental sustainability, may consider switching banks. Practices driving this decision include personal values, enhanced public image, business prospects in green finance, talent attraction and retention, meeting investor and stakeholder expectations, and gaining a competitive edge. While the board's decision involves various practices, the increasing importance of green management in a socially responsible context can significantly impact staff and customer perceptions when choosing banking institutions (Pinillos & Fernández Mateo, 2018; Masud, Nurunnabi et al., 2018; Kaium Masud et al., 2018).

External stakeholders:

C637 – A4: *Individual clients* hold personal bank accounts. These clients must adhere to the bank's established policies and regulations (Alshebami, 2021). Studies found that customer intentions to adopt sustainable banking services are driven by their attitudes, social norms, perceived ease of adoption, and expected environmental benefits. Environmental consciousness and trust indirectly shape these intentions by influencing attitudes and perceptions (Taneja & Ali, 2021).

C638 – A5: *SME's clients* comprise small and medium enterprises that have a minimum of six and a maximum of 29 employees with a bank account (Wang, 2016; Lafuente & Szerb, 2021). By leveraging the engagement and behavior of individual clients, banks can advance their sustainable management goals, benefiting both the institution and the broader community.

C639 – A6: *Big corporate clients* in banking are large companies with extensive banking relationships with a banking institution, such as a bank. These are often significant firms, multinational corporations, large enterprises, and other vital organizations with complicated and considerable banking requirements (Shkodina et al., 2019).

Big corporate clients have distinct banking needs that can be more complex than individual or small business consumers. Specialized banking services, substantial credit facilities, customized investment solutions, and sophisticated treasury management services are frequently required (Masud, Hossain et al., 2018).

Banking relationships with major corporate clients can be extremely profitable for banking institutions because these clients generate significant revenue through fees, interest income, and other banking transactions (Caruso, 2018; Fashli et al., 2018).

Generally, green management methods in a bank can improve its reputation, brand image, and stakeholder relationships. It can result in higher trust, more business prospects, and better risk management. As a result, the bank's commitment to sustainability and environmental responsibility may impact the decision-making of both internal and external stakeholders. The Second Chapter bridges theory and practice, tailoring sustainable strategies to address challenges in emerging economies. This localized and stakeholder-centric approach ensures actionable insights that enhance banks' competitiveness while meeting sustainability goals, providing a robust foundation for achieving the dissertation's aims.

2.2. Theoretical Model Development Based on Research Findings

The growing emphasis on sustainability has positioned the banking sector as a key player in fostering environmental and social responsibility. With increasing pressure from stakeholders and regulatory bodies, banks are reshaping their management practices to align with green objectives while maintaining competitive advantage. The dissertation introduces a novel framework integrating sustainability into banking operations, focusing on innovative managerial practices driving environmental accountability and operational efficiency. By addressing diverse stakeholder priorities, this framework highlights the importance of strategic deci-

sion-making to balance profitability, environmental goals, and social responsibilities. Leveraging contemporary management theories, it provides banks with a structured pathway to adapt to evolving sustainability demands while enhancing their market relevance and fostering long-term resilience. The research explores theoretical underpinnings and delivers actionable strategies to position banks as leaders in sustainable financial practices. In Figure 2.1, the conceptual model showcases a comprehensive approach for banking institutions to integrate sustainability into their core management. This is achieved through various green managerial practices tailored for the banking sector, organized under five main categories: green product management, green platform management, green HR management, green environmental management, and green finance management. These categories encompass 33 sub-management practices that promote environmental responsibility and sustainability within the banking industry.

These green managerial practices will be analyzed to assess their influence on decision-making among diverse stakeholders, both internal and external, emphasizing a collective effort to achieve sustainability goals and promote a more environmentally friendly future through sustainable banking practices.

Internal stakeholders within the bank include employees, shareholders, and the board of directors, while external stakeholders consist of individual clients, SME clients, big corporate clients, and suppliers. Each group possesses distinct interests, priorities, and levels of influence that impact the bank's decisions regarding sustainability practices and initiatives.

Decision-making (DM) for internal and external stakeholders in sustainable banking is structured around three key sub-criteria encapsulated in the trio sustainability formula (planet–profit–people).

DM1 – Environmental support concern (the planet). This criterion focuses on decisions to support environmental sustainability goals. It involves actions that reduce environmental impact, promote conservation, and adhere to eco-friendly practices within banking operations.

DM2 – Profit concern (profit). Decision-making under this criterion revolves around banking viability and profitability. It includes strategies that support sustainability and ensure economic feasibility and return on investment in green initiatives.

DM3 – Reputation concern (people). This criterion emphasizes decisions that enhance the bank's reputation and brand image through sustainable practices. It involves building stakeholder trust, demonstrating corporate responsibility, and fostering a positive perception of the bank's commitment to environmental and social issues.

The intricate relationship between green decision-making by stakeholders and green competitiveness underscores the significant influence of stakeholder preferences on a bank's sustainability practices.

By strategically embracing green strategies, banks position themselves to thrive in a dynamic banking market where demand for sustainable banking products is growing. This approach drives innovation, captures market opportunities, and boosts overall competitiveness. The integration of the resource-based view (RBV), dynamic capabilities (DC), the market-based view (MBV), and the stakeholder theory within the framework for sustainable banking represents a strategic approach to enhance sustainability and competitive advantage in the banking sector. RBV emphasizes leveraging internal resources and capabilities unique to each bank to develop sustainable strategies. By effectively identifying and deploying these resources, banks can differentiate themselves in the market and meet evolving regulatory and societal expectations.

Dynamic capabilities (DC) complement RBV by enabling banks to adapt and innovate continuously in response to changing environmental, social, and regulatory landscapes. This capability allows banks to comply with sustainability regulations and lead through proactive initiatives that align with stakeholder expectations. The hypothesis framework in this research is systematically derived from established theoretical insights and existing empirical research, ensuring a robust foundation for understanding the relationship between sustainable management and green competitiveness in the banking sector.

The first hypothesis (H1) posits that the adoption of sustainable management practices positively influences green competitiveness.

This aligns with the resource-based view (RBV), which emphasizes the strategic optimization of internal resources as a means to gain a competitive advantage in sustainability-driven markets. Building on this, H2 suggests that banks integrating environmental, social, and governance (ESG) criteria into their strategic decision-making processes enhances both stakeholder trust and financial performance.

This hypothesis is grounded in the stakeholder theory, which underscores the significance of engaging key stakeholders in corporate sustainability initiatives. In response to technological advancements, H3 explores how the digital transformation of green banking improves the efficiency and accessibility of sustainable financial products.

This hypothesis is supported by the dynamic capabilities theory, which highlights the importance of adaptability in responding to environmental and technological changes.

Furthermore, H4 states that green product innovation and eco-friendly financial services enhance a bank's market positioning and overall competitiveness. This perspective is backed by the market-based view, which explains how differentiation through sustainability can drive competitive advantage.The research also considers risk management in sustainability-driven banking. H5 asserts that im-

plementing sustainability-driven risk management strategies helps mitigate operational risks and enhances resilience. This aligns with Risk Management Theory, which has been increasingly applied to sustainable finance.

Finally, H6 focuses on the role of stakeholder-oriented sustainable management frameworks in fostering long-term financial performance and customer retention. This hypothesis is again rooted in the stakeholder theory, reinforcing the notion that organizations must align their sustainability strategies with the expectations of multiple stakeholders to achieve long-term success.

By integrating these theoretical perspectives, the research establishes a structured framework that links sustainability practices to banking performance, competitiveness, and risk mitigation, providing a comprehensive approach to understanding the role of sustainable management in the banking sector.

Market-based view theory guides banks in analyzing and responding to market demands for sustainability.

This includes fostering trust among stakeholders and enhancing overall sustainability performance.

Facilitated by dynamic capabilities, strategic innovation continuously improves and transforms business models, ensuring resilience and sustained growth in changing market dynamics.

The stakeholder theory underscores the importance of engaging various internal and external stakeholders in the sustainability journey. Banks that actively involve stakeholders in decision-making processes foster trust and collaboration. This approach enhances reputation and ensures that sustainability efforts resonate across the organization and with external partners.

Moving forward, the framework for sustainable banking outlined here exemplifies a comprehensive approach that integrates these theories. It underscores the importance of operational efficiency and technological advancement. By embedding RBV, DC, MBV, and the stakeholder theory into their core operations and services, banks can effectively navigate regulatory changes, meet stakeholder expectations, and drive competitive advantage through sustainable practices.

This holistic approach ensures compliance and market relevance and fosters a greener, more sustainable future through responsible banking practices.

The theoretical model assesses and compares the eco-friendly management strategies of banks striving to improve their environmental competitiveness. By adopting and evaluating these measures, banks demonstrate their commitment to sustainability, attract eco-conscious customers and investors, and contribute positively to the environment and society.

The system of indicators developed in this dissertation is grounded in the latest systematic literature review. This framework supports the dissertation's objective of advancing sustainable banking and serves as a practical tool for assessing and enhancing banks' environmental competitiveness. Banks can leverage

these indicators to align their strategies with sustainability goals while maintaining stakeholder trust and market relevance.

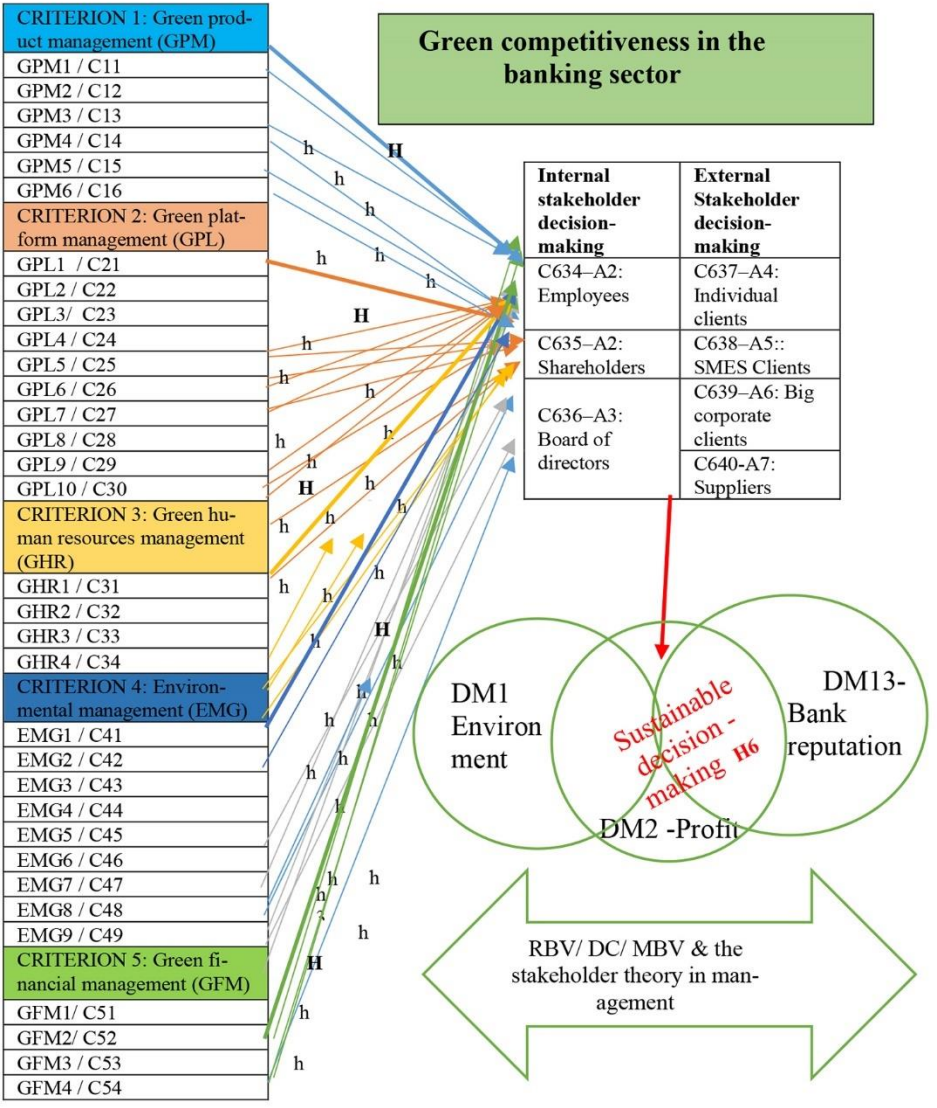


Fig. 2.1. Theoretical model: Sustainable management for green competitiveness

This approach reinforces the role of responsible banking in shaping a more sustainable future for the industry.

Table 2.2 summarizes the hierarchical structure of criteria for optimizing green management in the banking sector.

The pursuit of sustainability has become increasingly vital in the banking sector, with businesses recognizing the importance of integrating environmental considerations into their operations. This comprehensive illustration outlines various criteria and sub-criteria for optimizing green management practices within the banking sector. By delineating specific strategies and initiatives, this framework provides a roadmap for banking institutions to enhance their environmental performance while fostering long-term economic viability.

The hierarchical structure of green management optimization in the banking sector consists of multiple levels, each representing a different aspect of sustainable management.

Level 1 represents the overarching optimization goal, which is optimizing green management in the banking sector. This level establishes the primary objective of integrating sustainability into banking practices through structured decision-making.

Level 2 defines the major criteria essential for achieving green management optimization. These criteria include green product management, green platform management, green HR management, environmental management, and green financial management. Each criterion represents a core functional area where sustainability efforts can be strategically implemented within banking operations. At Level 3, each major criterion is further divided into sub-criteria, ensuring a detailed and structured representation of the various components influencing sustainable banking practices. For example, green product management includes subcriteria such as green mortgages, sustainability-linked loans, and green reward systems.

Similarly, green platform management encompasses digital finance, fintech development, and mobile banking innovations. These sub-criteria enable a granular assessment of how each factor contributes to the broader objective of sustainability optimization. By structuring Table 2.2 in this hierarchical manner, the research provides a comprehensive framework for prioritizing green management initiatives. This hierarchy facilitates a systematic evaluation and optimization process, ensuring that banks can allocate resources effectively while aligning their sustainability efforts with both regulatory requirements and stakeholder expectations.

The dissertation presents a model designed to integrate green management practices within the Lebanese banking sector, drawing on theories such as the resource-based view (RBV), dynamic capabilities (DC), the market-based view (MBV), and the stakeholder theory. By combining these theoretical perspectives, the model provides a structured framework for banks to implement sustainable practices aligned with stakeholder expectations and regulatory demands. The

model's core dimensions encompass green product management, green platform management, green HR management, environmental management, and green financial management.

Table 2.2. Hierarchical criteria for optimizing green management in the banking sector

(Level 1) Optimizing green management in the banking sector
(Level 2) Criterion 1: Green product management (GPM)
(Level 3) Sub-criterion 1
C11 – Green mortgages C12 – Green home modernization loans C13 – Sustainability-linked loans C14 – Green debit/Credit cards C15 – Green reward systems C16 – Low-charge insurance premium for sustainable practices
(Level 2) Criteria 2: Green platform management (GPL)
(Level3) Sub-criterion 2
C27 – Digital finance as digital banking C28 – ICT skills C29 – ICT management C210 – Fintech development C211 – R&D green innovative activities C212 – Mobile/SMS banking C213 – Online payment gateway service C214 – Express cash system C215 – Swift system C216 – Technical assistance (TA)
(Level2) Criterion 3: Green HR management (GHR)
(Level 3) Sub-criterion 3
C317 – Green human skills by green awareness C318 – Green training C319 – Green human management by green recruitment C320 – Green expertise
Criterion 4: Environmental management (EMG) (Level 2)

End of Table 2.2

(Level 3) Sub-criterion 4
C421 – Energy saving C422 – Paperless banking C423 – Refusing the support of polluting businesses C424 – Using renewable energy C425 – Green annual report C426 – Green community activities C427 – People's Green Awareness and Green Orientation programs C428 – Collaboration with other sectors/organizations for yearly green goals C429 – Green campaigns to encourage green projects
(Level 2) Criterion 5: Green financial management (GFM)
(Level 3) Sub-criterion 5
C530 – Green venture capital C531 – Green private equity funds C532 – Green brokerage C533 – Green bonds
(Level 4) Criterion: Internal & external stakeholders in the banking sector
Internal stakeholders C634 – A1: Employees C635 – A2: Shareholders C636 – A3: Board of directors External stakeholders C637 – -A4: Individual clients C638 – A5: SMEs clients C639 – A6: Big corporate clients C640 – A7: Suppliers

Each criterion addresses unique aspects of sustainable management, such as developing eco-friendly banking products, promoting resource-efficient operations, and fostering a green organizational culture that aligns with stakeholder priorities across internal (employees and board members) and external (clients, SMEs, and corporate clients) groups.

Integrating RBV, DC, and MBV allows banks to leverage existing resources, adapt to changing environmental demands, and respond effectively to market trends in sustainability. This combination also reinforces the bank's capacity to build resilience and gain a competitive edge by embedding sustainability into its operational core.

Furthermore, the stakeholder theory component ensures that all sustainability efforts resonate with the interests of diverse stakeholders, ensuring greater engagement and support for green initiatives. This model, empirically validated through stakeholder feedback and prioritized criteria, provides actionable guidance for banks seeking to enhance green competitiveness and meet evolving sustainability standards.

The system of indicators outlined in the dissertation is constructed to directly fulfil the research's primary objective: developing a model that enables Lebanese banks to adopt sustainable management practices effectively while enhancing green competitiveness. Each criterion, e.g., green product management, green platform management, green HR management, environmental management, and green financial management, was selected based on its alignment with the goals of stakeholder engagement, operational efficiency, and environmental responsibility, all of which are pivotal to the research objectives. Specifically, green product management supports the objective of creating eco-friendly banking offerings that resonate with stakeholder expectations. At the same time, green HR management fosters a sustainability-oriented organizational culture essential for long-term adaptability. These criteria are integral to achieving the dissertation's goal of creating a strategic framework that banks can use to address stakeholder demands and market pressures within Lebanon's unique regulatory and economic environment.

This research employs the combined analytic hierarchy process (AHP) and structural equation modeling (SEM) methods to ensure the prioritization of these criteria aligns with stakeholder needs. This methodological choice fulfils the dissertation's objective of developing a structured, data-driven model for sustainable management, allowing banks to allocate resources effectively toward the most impactful initiatives.

By establishing a cohesive and actionable set of indicators, this section bridges theoretical models with the practical demands of the Lebanese banking sector, directly supporting the dissertation's goal of providing a replicable framework for integrating sustainability in banking institutions.

Ultimately, the indicator system is a foundation for Lebanese banks to align operational practices with the dissertation's objective of fostering green competitiveness and enhanced stakeholder engagement.

The research adopts a mixed-methods approach, combining structural equation modeling (SEM-AMOS) for hypothesis testing and the analytic hierarchy process (AHP-MCDM) for prioritizing sustainability criteria.

This methodological framework is structured into three key stages:

- Identification of green management criteria – a systematic literature review was conducted to extract key sustainability factors relevant to the banking sector, integrating insights from management theories such as

the stakeholder theory, resource-based view, and the dynamic capabilities theory.

- Development of the conceptual and research models. The research builds upon existing theoretical frameworks to design a comprehensive sustainability model. The theoretical model maps out relationships between sustainability factors, while the research model (via SEM-AMOS) refines these constructs for empirical testing.
- Integration of AHP-MCDM and SEM for empirical validation. The AHP-MCDM approach enables the ranking and prioritization of green management practices from a stakeholder-centric perspective, while SEM empirically tests the relationships between the identified variables. This integration ensures robust, multi-dimensional validation of the proposed hypotheses.

The research model serves as both a theoretical and empirical framework, integrating established management theories, e.g., the stakeholder theory, resource-based view (RBV), and dynamic capabilities, to explain how sustainable management practices influence green competitiveness and stakeholder decision-making in the banking sector.

The model provides a structured foundation for understanding sustainability-driven competitiveness within banking institutions. At the same time, this model is empirical, as it has been tested and validated using real-world data, ensuring its applicability beyond theoretical constructs.

Unlike purely conceptual models, this model moves beyond qualitative interpretations by offering a structured, data-driven approach to assessing how sustainability initiatives impact decision-making and competitive positioning.

Given that decision-making is a core element of this research, this model contributes by:

- Providing a structured decision-making tool. This model enables banks to systematically evaluate and prioritize sustainability initiatives based on their influence on green competitiveness and stakeholder engagement.
- Quantifying stakeholder-driven decision-making. This model empirically validates sustainability trade-offs, clarifying how internal and external stakeholders shape sustainability strategies in banking.
- Enhancing sustainability-oriented decision-making. This model offers a replicable method for banks to integrate sustainability into their strategic choices while ensuring alignment with both financial and environmental objectives. For example, this model can be applied by banks to develop customized sustainability strategies, ensuring they align with specific stakeholder expectations and regulatory requirements.

- By incorporating a structured decision-making approach. This model provides practical, adaptable insights that can guide sustainability integration in both emerging and developed banking markets.

2.3. Comparative Analysis of Similar Studies and Applied Methodology

Similar studies on sustainable management for green competitiveness offer significant insights into sustainable management and its impact on stakeholder decision-making. These studies validate the hypotheses proposed in the dissertation, particularly regarding the influence of green product management, platform management, and banking management practices on stakeholder decisions.

These studies highlight how stakeholder decisions to choose greener banks over less sustainable ones significantly influence their strategies, aligning them with sustainability goals such as environmental protection, banking performance, and social responsibility. This decision-making, as outlined in Hypotheses 1 through 6, underscores the critical role of stakeholders in driving banks to enhance their green practices, thereby reinforcing their competitive advantage in the banking sector.

The relationship between sustainable banking regulations and stakeholders lies in how these regulations influence banks' banking health and stability, directly impacting stakeholders such as customers, investors, regulators, and the broader community. Effective regulations ensure that banks operate sustainably, protecting stakeholder interests by reducing risks like default and enhancing transparency, ultimately fostering trust and confidence in the banking system. Future research could examine how these regulations balance the needs and expectations of various stakeholders, particularly during economic stress (Karim et al., 2022).

The findings consistently show that sustainability practices are crucial in shaping stakeholder preferences, aligning with the dissertation's hypotheses on how these practices drive green competitiveness (Harry Ndukwu, 2022). One key benefit from the literature is the broadening of context, as the studies extend the identification of sustainable practices across various sectors and regions, offering a comprehensive view of how these practices can be adapted and implemented in different settings. This broader perspective reinforces the relevance of the dissertation. It emphasizes the importance of integrating sustainability into various facets of the dissertation's focus on the banking sector and its specific dynamics (Do Rosário Cabrita et al., 2023; Skvarciany & Jurevičienė, 2024). These studies align with Hypotheses H4 (environmental management positively influences stakeholder decision-making) by demonstrating how environmental practices enhance stakeholder engagement across different industries.

Moreover, the business management literature, from intellectual capital to banking products, supports the comprehensive approach taken in the dissertation. This integrated approach combines multiple green management practices into a cohesive framework to enhance green competitiveness (Krisciukaityte et al., 2023; Cohen, 2024). The EU's 2020 taxonomy sets criteria for environmental sustainability, aiming to prevent greenwashing and reduce information costs in green finance. While the green bond standard is under review, the need for a similar taxonomy for socially sustainable activities remains unmet, with private initiatives leading the way in voluntary principles (Busch et al., 2024).

These findings support Hypotheses H5 (green financial management positively influences stakeholder decision-making) and Hypotheses H6 (stakeholder decision-making positively influences green competitiveness in the banking sector), highlighting the role of banking management in driving sustainability.

Similar studies found a positive impact of sustainable human resources management (Krisciukaityte et al., 2023; Mečionytė, 2021). These studies reinforce Hypotheses H3 (green human resources management positively influences stakeholder decision-making).

Research by Lapinskaite et al. (2020) emphasizes the critical role of green banking performance, mainly focusing on green innovations and banking products. Their findings suggest that banks prioritizing developing and promoting green products positively influence stakeholder decisions. The findings support Hypotheses H1 (green product management positively influences stakeholder decision-making) by demonstrating that green product management is a sustainability initiative and a strategic tool to attract and retain stakeholders who value environmental responsibility (Lapinskaite et al., 2020).

Misiunaite (2020) highlights the importance of knowledge transfer and platform management in international business services. The research shows that platforms integrating sustainable practices, such as environmentally friendly processes and green innovations, are more likely to gain stakeholder trust and engagement (Misiūnaitė, 2020). These findings directly support Hypothesis H2 (green platform management positively influences stakeholder decision-making) by providing evidence that sustainability platforms can significantly impact stakeholder decision-making, making them more likely to support and engage with the banking institution.

Contrarily, others found that economic and socially related SDGs positively influence bank customer trust, loyalty, and perceptions of fair pricing but do not significantly affect customer satisfaction. Additionally, environmentally related SDGs did not considerably impact customer behavior. The findings suggest that while customers value banks' economic and social sustainability efforts, these do not translate into higher satisfaction, highlighting a potential area for further exploration in customer engagement strategies (Stauropoulou et al., 2023).

Despite these contributions, the dissertation introduces several new and distinct elements. It specifically targets the banking sector, exploring how green management practices influence stakeholder decision-making within this industry, which is a less explored area in the existing literature. The dissertation also develops a holistic framework that integrates green product management, platform management, human resources management, environmental management, and banking management, offering a more comprehensive identification of how these factors collectively drive green competitiveness.

Additionally, the dissertation focuses specifically on the decision-making processes of stakeholders and how these decisions influence green competitiveness, providing deeper insights into the dynamics between sustainable practices and stakeholder behavior.

Finally, the dissertation explicitly links stakeholder decision-making to green competitiveness in the banking sector, a connection often implied but not thoroughly analyzed in existing studies. Studies show that this connection is crucial for analyzing the long-term impacts of sustainable management practices on a company's competitive position (Levickaitė, 2018; Bezpartochnyi, 2019). These studies support Hypothesis H6 (stakeholder decision-making positively influences green competitiveness in the banking sector).

In identifying the research gap, it becomes clear that there is a lack of detailed, sector-specific studies that explore how green management practices influence stakeholder decision-making in the banking sector. Most existing studies are either broad in scope or focused on other industries, leaving a gap in analyzing these dynamics within banking institutions. Furthermore, the connection between stakeholder decision-making and green competitiveness in the banking sector is underexplored. Existing studies often discuss sustainability in general terms but do not thoroughly examine how these decisions contribute to competitive advantage. The dissertation addresses this gap by explicitly linking these concepts. Lastly, there is a need for broader empirical validation of these concepts across different regions and sectors within the banking industry, which the research contributes to applying its framework in a specific context, providing insights that can be generalized or adapted to other settings.

The research methodology is applied through a structured data collection and validation process. The first phase involved an expert-driven multi-criteria decision-making (MCDM) assessment to refine and prioritize sustainability indicators. Experts participated in a two-round evaluation process to enhance consensus on the ranking of sustainability criteria, ensuring a reliable weighting system for the research model. The second phase deployed a large-scale survey among banking sector stakeholders, capturing empirical data on stakeholder perceptions regarding green management practices. Using SEM-AMOS, the research tested causal relationships between variables, validating the impact of green product

management, green HR, environmental management, and green financial management on stakeholder decision-making and green competitiveness. The research develops a data-driven, stakeholder-oriented sustainability model that enhances the applicability of green management in banking.

Various methods have been employed in similar studies to analyze the impact of sustainable management practices on stakeholder decision-making and green competitiveness. The TOPSIS (Technique for Order Preference by Similarity to Ideal Solution) method was used to assess the greenness of banking practices by aggregating and evaluating multiple sustainability criteria (Lapinskaite et al., 2020). This approach allowed for a comprehensive ranking of practices based on their effectiveness in promoting sustainability.

Additionally, the analytic hierarchy process (AHP) was utilized to structure and prioritize sustainability criteria, facilitating the organization of complex decision-making processes in the reviewed studies (Misiunaite, 2020). This method enabled a systematic evaluation of the relative importance of various sustainability factors, creating a clear hierarchy for decision-making.

Multi-criteria decision-making (MCDM) was also commonly used, allowing for the simultaneous consideration of multiple factors when evaluating the impact of green management practices. This approach was precious in balancing environmental, profitability, and reputation concerns, offering a nuanced analysis of how these factors influence stakeholder decisions (Skvarciany & Jurevičienė, 2024).

Structural equation modeling (SEM) was employed in several studies to model the relationships between sustainability practices and stakeholder behavior (Vrontis et al., 2023). This method provided empirical validation for hypotheses regarding the influence of green management practices on stakeholder decision-making, helping to establish a clear link between sustainable practices and competitive advantage in the banking sector (Assunção et al., 2020).

While many studies utilize multi-criteria decision-making methods, there remains a need for models that integrate mixed methods, such as AHP and MCDM, to prioritize stakeholder needs while simultaneously addressing environmental, profitability, and reputation concerns. The dissertation addresses this gap by developing and testing a comprehensive model incorporating all these factors.

The research builds upon and extends the body of research on sustainable management within the banking sector by comparing existing studies and identifying critical advancements in green competitiveness practices. Previous studies, such as those by Lapinskaite et al. (2020) and Misiunaite (2020), have applied multi-criteria decision-making (MCDM) and TOPSIS methods to assess green banking initiatives, focusing on their effectiveness in promoting sustainability and stakeholder satisfaction.

However, these approaches lack a comprehensive integration of mixed methods that balance stakeholder priorities and address environmental, profitability, and reputation goals. The research fills this methodological gap by employing a dual-method approach, e.g., AHP (analytic hierarchy process) and SEM (structural equation modeling), to prioritize sustainability criteria while examining their causal relationships, providing a more nuanced understanding of stakeholder dynamics methods in this research allow for a detailed evaluation of green management criteria, such as green product management, environmental management, and green HR. Each of these criteria is critically examined to address the dissertation's task of developing a model incorporating stakeholder-specific insights, thus offering banks a framework adaptable to developed and emerging markets.

The dissertation contributes to management theories like the stakeholder theory and the resource-based view (RBV), providing a structured approach banks can leverage to integrate sustainable practices effectively. This contribution addresses the core research objectives by directly linking sustainable management practices to green competitiveness and long-term stakeholder engagement, setting a foundational model to guide future banking sustainability studies.

2.4. Empirical Design, Hypotheses, and Research Questions

*Empirical design***.** The dissertation adopts a mixed-method research design that combines structural equation modeling (SEM) with the analytic hierarchy process (AHP) within a multi-criteria decision-making (MCDM) framework. The integration of these methods addresses the complexity of sustainable management in the Lebanese banking sector by linking hypothesis testing with stakeholder-based prioritization. SEM facilitates the examination of causal relationships and identifies how specific sustainable practices influence decision-making. AHP complements these findings by assigning weighted significance to each criterion, enabling banks to align strategic decisions with stakeholder expectations through a structured and data-driven approach.

As illustrated in Table 2.3, integrating SEM results with AHP-MCDM average weights strengthens the analysis by overcoming the limitations of AHP-MCDM when used in isolation. This combined model allows for the assessment of both the overall influence of sustainable management practices and the varying importance assigned by different stakeholder groups, thereby enhancing decision-making precision. For example, the integrated approach reveals which dimensions, such as green products or environmental management, carry the highest perceived value, supporting more effective resource allocation.

This mixed-method approach provides a multi-dimensional view of sustainable management, combining SEM's relational insights with AHP's precise prioritization capabilities. For example, SEM identifies the significance of green products and environmental management as high-impact practices, while AHP prioritizes these criteria based on stakeholder-specific weights. By integrating these methods, the research prioritizes criteria for each stakeholder category, mapping the influence and priorities of employees, shareholders, board members, and clients in sustainable decision-making.

Table 2.3. Applied research strategy

Method	Purpose	Justification	The rationale for the mixed-method
Structural equation modeling (SEM)	To examine relationships between latent variables and test causal hypotheses	SEM allows for analyzing complex relationships, specifically how stakeholder influence impacts sustainable management	Provides empirical validation of how sustainable practices affect stakeholder-driven decision-making
Analytical hierarchy process (AHP)	To prioritize sustainability criteria based on stakeholder preferences	AHP enables clear ranking by quantifying the relative importance of sustainability factors, aiding banks in aligning strategies	Allows weighting by specific stakeholder groups to address diverse preferences and enhance prioritization accuracy

This dual framework also supports stakeholder segmentation, helping banks distinguish between internal stakeholder (e.g., employees and board members) preferences and external stakeholders (e.g., individual clients, SMEs, and suppliers). Each group's influence on sustainability decisions is ranked according to its weighted impact, allowing banks to address sustainability holistically. This structured model supports banks in making targeted decisions that align with environmental responsibility and strategic goals, fostering green competitiveness across all stakeholder groups.

This research employs a mixed-methods approach by integrating structural equation modeling (SEM) with AMOS and multi-criteria decision-making (MCDM) using the analytic hierarchy process (AHP). SEM is used to analyze complex relationships between variables and validate theoretical models, while AHP structures decision-making by establishing hierarchies and conducting pairwise comparisons to prioritize sustainability criteria. This combined approach ensures both statistical validation and hierarchical ranking of green management practices in the banking sector.

To strengthen the reliability of AHP evaluations, insights were gathered from ten experts specializing in banking, finance, business administration, innovation, IT, and market research (detailed in Annex A). The experts were selected based on the following key criteria:

- Professional experience. Each expert has a minimum of 13 years of experience, with many exceeding 20–30 years in their respective fields.
- Academic qualifications. All panel members hold PhD or DBA degrees in business administration, finance, or banking, ensuring their assessments are both theoretically sound and practically relevant.
- Sector-specific expertise. The panelists were chosen for their in-depth knowledge of green banking, sustainable management, and financial decision-making, ensuring an informed evaluation of sustainability criteria.

The AHP method relies on expert judgment to assign weights and priorities to green management criteria, ensuring a structured and methodologically sound evaluation. Two rounds of assessments were conducted to refine rankings and ensure consensus, with the consistency ratio (CR) checks applied to maintain logical coherence.

The questionnaire was designed using the AHP-MCDM and SEM approaches, integrating expert validation and structured stakeholder feedback. Its development followed three key steps:

1. Defining key constructs – a comprehensive literature review identified five primary criteria for green banking: green product management, green platform management, green human resource management, environmental management, and green financial management.
2. Operationalizing variables. Each criterion was broken down into measurable sub-criteria, forming the basis for survey items that assess stakeholder perceptions and decision-making behavior.
3. Expert review and pilot testing. The questionnaire was validated by industry experts (Annex A), followed by pilot research with a small sample to ensure clarity, reliability, and alignment with research objectives.

Following Maury (2018), 5–10 questions per parameter or 10 questions per sub-variable were allocated to determine the optimal sample size. Given the research's five variables and 33 sub-variables, a minimum of 330 responses was required. To further enhance validity and reliability, a final sample of 403 participants was selected, comprising both internal and external stakeholders (employees, board members, individual clients, corporate clients, and SMEs). This diverse sample ensures a comprehensive assessment of green banking practices across multiple perspectives.

The questionnaire structure (Annex B) includes sections on demographic information, stakeholder classification, sustainability assessments, and AHP-based prioritization. Demographic questions capture respondents' background details

such as age, education, job position, and banking experience. The stakeholder type and banking engagement section identifies each respondent's role and level of interaction with banks. The green banking decision-making section explores stakeholder preferences and behavior toward sustainability initiatives. A separate section assesses green management criteria using a five-point Likert scale to measure the perceived importance of various sustainable practices. This structured questionnaire supports a rigorous analysis of stakeholder decision-making and enables statistical validation through AHP-MCDM and SEM-AMOS methods. Survey responses (Annex C) offer empirical evidence for hypothesis testing, reinforcing the research contribution to enhancing green competitiveness in the banking sector.

Hypotheses and Research Questions

This research investigates the banking sector to establish how the management of green products and services, the management of the green platform, the management of green human resources, environmental management, and green financial management influence the decision-making among internal and external stakeholders.

Green decision-making in this research refers to the process of integrating sustainability into banking strategies, prioritizing eco-friendly investments, and aligning operations with environmental and stakeholder expectations. It focuses on sustainable management practices that enhance green competitiveness while ensuring long-term environmental responsibility. This differs from decision-making in general, which encompasses a broader range of strategic, financial, and operational choices, often driven by profitability, risk management, and regulatory compliance without necessarily prioritizing sustainability.

In this model, decision-making (DM) refers to the decision-making of both internal and external stakeholders, specifically in the context of sustainability. This means that in this research, decision-making is a form of green decision-making, as it is assessed through the planet–profit–people framework. Each sub-criterion (DM1, DM2, and DM3) reflects a different aspect of stakeholder decision-making related to sustainability: environmental concerns (the planet), financial profitability (profit), and reputation (people). Therefore, in this research, decision-making is inherently linked to sustainability and is considered green decision-making, as it evaluates how stakeholders prioritize sustainability factors when making banking-related decisions.

Sub-criterion 1: DM1 – Decision-making based on environmental support concern.

Sub-criterion 2: DM2 – Decision-making based on profit concern.

Sub-criterion 3: DM3 – Decision-making based on reputation concern.

To investigate the effect of green management practices on stakeholder decision-making in the banking sector, the following hypotheses have been established:

H1 – Green product management (GPM) positively influences stakeholder decision-making in the banking sector.

H2 – Green platform management (GPL) positively influences stakeholder decision-making in the banking sector.

H3 – Green human resources (GHR) management positively influences stakeholder decision-making in the banking sector.

H4 – Environmental management (EMG) positively influences stakeholder decision-making in the banking sector.

H5 – Green financial management (GFM) positively influences stakeholder decision-making in the banking sector.

H6 – Stakeholder (internal and external) decision-making positively influences green competitiveness in the banking sector.

Dependent Variables

This research operationalizes the dependent variables by examining green decision-making among internal and external bank stakeholders. The analysis focuses on how various stakeholder groups influence and respond to sustainability initiatives within the banking sector. This construct is delineated by three criteria: DM1 – environmental support, DM2 – green profit, and DM3 – green reputation. These variables serve as pivotal indicators in this investigation, aiming to understand the nuanced dynamics of sustainable management within banking institutions. This research is guided by three interrelated questions that delve into these dependent variables, probing how banks navigate environmental support, seek sustainable profitability, and cultivate green reputations among their stakeholders. Three research questions correspond to these dependent variables:

- Q14 related to DM3. If you knew your bank had a bad green reputation because of supporting polluting businesses or not taking any crucial steps to protect the environment, would you transfer your banking account to a greener bank?
- Q15 related to DM1. Your decision-making to deal with a green bank is based on your interest in supporting the environment.
- Q16 related to DM2. Your decision-making to deal with a green bank is based on your belief that investing in a green bank is profitable.

These questions are crafted to delve into stakeholders' perspectives and behavior regarding green banking, covering aspects such as environmental support, banking incentives, and reputational considerations.

The three research questions are addressed to both internal and external stakeholders of the banking sector. These include employees, board members, investors, regulators, individual clients, SMEs, and corporate clients. The research aims to explore how stakeholders perceive, influence, and respond to green banking practices. The questions focus on stakeholder decision-making behavior, investment preferences, and reputational concerns regarding banks' sustainability efforts. By gathering insights from these diverse groups, the research aims to understand the impact of sustainable management strategies on stakeholder engagement and green competitiveness within the banking sector.

Independent Variables

On the other hand, the independent variables in this research were defined as green management practices (GMP), comprising five criteria: GPM, GPM, GHM, GEM, and GFM. These variables are the focal points for analyzing banks' proactive sustainable management strategies and initiatives, providing a comprehensive framework for researching their impact on stakeholder perceptions and decisions.

Six questions related to Criterion 1 – green product management (GPM):

15. GPM1: You believe your bank should implement green mortgage management that offers low-interest rates while adhering to green building standards.

16. GPM2: You believe your bank should offer green home modernization loans at lower interest rates to individuals intending to make energy-saving renovations.

17. GPM3: You believe that sustainable management linked to loans with low interest rates is essential to encourage people to achieve predetermined green goals.

18. GPM4: Due to the availability of sustainable management in green banking products, you prefer to purchase a credit card made from recycled or bio-plastic instead of traditional plastic.

19. GPM5: Due to the sustainable management of green reward systems, you might redeem your accumulated points in your banking account for environmentally friendly gifts.

20. GPM6: You agree to benefit from the management of insurance premiums for eco-friendly actions, such as receiving reduced insurance rates for using used or recycled parts when repairing damaged cars.

Ten questions related to Criterion 2: green platform management (GPL):

21. GPL1: You believe digital banking is essential when interacting with your bank as part of the bank's green platform management.

22. GPL2: You agree that your bank must possess ICT (information and communications technology) skills management to use and understand various technological software effectively.

23. GPL3: You agree that intranet, call centers, and electronic fund transfers are examples of ICT management that your bank should effectively handle.

24. GPL4: The bank you deal with should excel in fintech management by ensuring its apps are user-friendly for bill payments, fund transfers, and other banking activities.

25. GPL5: Robotic process automation (RPA), ATM location features, and bill payment alerts are all examples of R&D green innovative activities that the bank you deal with should manage.

26. GPL6: The bank you deal with should efficiently manage mobile/SMS banking services to notify and alert all its clients effectively.

27. GPL7: Your bank should effectively manage its online payment gateway services like a point of sale (POS) system, which is crucial for businesses and customers to complete transactions.

28. GPL8: Efficient management of the express cash system, which involves cash withdrawals using a card and PIN at an ATM, is essential for the bank you deal with.

29. GPL9: The bank you deal with should ensure secure and robust management of the SWIFT (Society for Worldwide Interbank Banking Telecommunication) system.

30. GPL10: The bank you deal with should have effective technical assistance (TA) management to support banking modes, facilitating the preparation, financing, and execution of projects and programs.

Four questions related to Criterion 3 – green human resources management (GHR):

31. GHR1: Green human skills management, providing green awareness for the bank staff you deal with, is essential.

32. GHR2: The management of green training should be handled by the banks you deal with, providing staff with methods to ensure adequate resource utilization, energy conservation, and environmental preservation.

33. GHR3: Hiring individuals knowledgeable about the EMS (environmental management system) should be conducted by the bank you deal with as part of its Green human resource management.

34. GHR4: Green expertise management assists the bank you deal with in transforming into a greener institution, leveraging specialized knowledge in environmental quality and sustainable development.

Nine questions related to Criterion 4 – environmental management (EMG):

35. EMG1: Your bank should utilize LED lighting as part of its energy-saving management.

36. EMG2: You agree not to take a receipt after executing banking transactions as part of the bank’s paperless management.

37. EMG3: The bank you deal with needs to refrain from supporting polluting businesses as part of its environmental management.

38. EMG4: Your bank must manage renewable energy sources (e.g., solar and wind).

39. EMG5: You are interested in reading the green annual report published by the bank you deal with to assess its green activities and ensure the implementation of green sustainable management.

40. EMG6: The bank you deal with should manage Green community activities to support the environment and enhance its eco-friendly reputation.

41. EMG7: Management of people's green awareness through green orientation programs during events such as the FIFA World Cup or marathon is crucial for the bank you deal with.

42. EMG8: Collaboration management between the bank you deal with and other sectors or organizations to achieve green goals annually is essential.

43. EMG9: Management of green campaigns, such as green advertisements on the bank's platform, ads inside the bank, green TV ads, green displays, and green slogans, are all forms of environmental management that are essential at the bank you deal with.

Here are four questions related to independent Criterion 5 – green financial management (GFM):

44. GFM1: The bank you deal with should invest in startups and venture firms developing green and climate-smart technologies as part of its green venture capital management.

45. GFM2: The bank you deal with should invest in funds dedicated to financing green projects as part of its Green private equity funds management.

46. GFM3: As part of green brokerage management, it is essential for the bank you deal with to buy and sell green bonds on behalf of clients, thereby promoting green investments.

47. GFM4: Issuing debt securities to finance or refinance initiatives that positively impact the environment is essential for green bond management at your bank.

The survey questions employed in this research were designed using the multi-criteria decision-making (MCDM) method, ensuring a structured approach to evaluating green banking practices. The full set of survey questions is presented in Annex B.

This research's hypotheses development and research questions are rooted in understanding the impact of sustainable management practices, such as green product management (GPM), green platform management (GPL), green HR management (GHR), environmental management (EMG), and green financial management (GFM), on stakeholder decision-making. By applying these green criteria within the Lebanese banking sector, this research aims to quantify the

preferences and expectations of various stakeholders, addressing a critical gap in how sustainable practices align with the banking and environmental goals of internal and external actors (Galletta et al., 2024). The quantitative methodology is thus positioned to validate these green management criteria and to bridge the gap in understanding their specific effects on green competitiveness within the banking industry. Decision-making in the context of sustainability must align with green decision-making priorities, particularly those of key stakeholders. Each stage of the decision-making process plays a crucial role in determining which sustainability initiatives to implement. In the problem identification phase, banks recognize the need to integrate sustainability due to increasing regulatory demands, stakeholder expectations, and market competition.

The data collection and analysis stage involves gathering insights on environmental regulations, consumer preferences for green financial products, and sustainability benchmarks. During the alternative evaluation, banks assess different green initiatives, such as green mortgages, paperless banking, or energy-efficient operations, using methods like MCDM to prioritize options based on stakeholder influence and financial viability. Decision selection then focuses on identifying the most impactful sustainability strategies that align with stakeholder needs, regulatory requirements, and competitive positioning. Implementation ensures the adoption of these initiatives, embedding sustainability into core banking operations. Finally, monitoring and adjustment involve tracking the effectiveness of these strategies using sustainability KPIs, regulatory compliance audits, and stakeholder feedback, ensuring continuous improvement and strategic alignment with green banking objectives.

The stages of green decision-making from a stakeholder perspective follow a structured approach. Stakeholder awareness and engagement is the initial phase, where stakeholders, such as employees, board members, investors, and customers, recognize the significance of sustainable banking and express their expectations. Identification of sustainability priorities follows, where stakeholders determine the most relevant green banking practices, such as ethical investment products or carbon footprint reduction initiatives. In the evaluation and influence stage, stakeholders assess the feasibility and impact of these initiatives, lobbying for specific changes within financial institutions. Decision advocacy and alignment then occur, where stakeholders push for the adoption of sustainability-focused policies through direct influence on governance structures, shareholder meetings, and regulatory bodies. Implementation and participation involve active stakeholder involvement in executing green initiatives, such as clients opting for green banking products, employees adopting sustainable workplace practices, and investors supporting ESG-focused investments.

Finally, feedback and continuous advocacy ensure ongoing evaluation and refinement of green banking strategies, with stakeholders demanding greater

transparency, improved sustainability performance, and stronger regulatory commitments. Through this iterative process, stakeholders play a fundamental role in shaping and reinforcing sustainable decision-making in the banking sector.

2.5. Statistical Analysis and Key Findings

Reliability Analysis

The reliability test assesses the consistency of a measure with a given concept and its relationship to data stability. In this research, Cronbach's alpha will be employed to evaluate the reliability of each scale and its corresponding items, using a five-point Likert scale as the measurement framework. Cronbach's alpha coefficient above 0.7 is acceptable, showing very good internal consistency.

As illustrated in Table 2.4, the data results show that all constructs are reliable since Cronbach's values are computed above 0.7, except for the decision-making scale. The GPM with six items shows good internal consistency with Cronbach's alpha of 0.895.

This confirms that the majority of measurement scales used in this study demonstrate strong reliability and are appropriate for further statistical analysis. High internal consistency across most constructs enhances the robustness of the measurement model. It indicates that the survey items are coherently capturing the intended dimensions of sustainable management. This reliability ensures meaningful interpretation of stakeholder responses. As a result, the findings derived from these measures can be considered both stable and trustworthy. It also reinforces the internal coherence of the constructs, supporting the credibility of subsequent structural analyses. This reliability ensures meaningful interpretation of stakeholder responses.

Table 2.4. Reliability of constructs (before and after editing Question 14 of DM)

Reliability of constructs (before and after editing question 14 of DM)		
Scale before/after editing Question 14 of DM	Cronbach's alpha before/after editing question 14 of DM	Number of items before/after editing Question 14 of DM
GPM	0.895	6
GPL	0.954	10
GHR	0.894	4
EMG	0.891	9
GFM	0.837	4

End of Table 2.4

Reliability of constructs (before and after editing question 14 of DM)		
Scale before/after editing Question 14 of DM	Cronbach's alpha before/after editing question 14 of DM	Number of items before/after editing Question 14 of DM
DM	0.565	3
GPM'	0.898	6
GPL'	0.962	10
GHR'	0.909	4
EMG'	0.907	9
GFM'	0.872	4
DM'	0.721	3

In comparison, the GPL with ten items also indicates a very good internal consistency with a Cronbach's alpha of 0.954, and the GHR scale with four items shows a very good internal consistency with Cronbach's alpha of 0.894. The nine-item EMG scale also shows internal consistency, with a Cronbach's alpha of 0.891. The GFM scale with four items shows very internal consistency, with a Cronbach's alpha of 0.837. Only the DM with three items shows a poor internal consistency with Cronbach's alpha of 0.565. After revising question 14 of the DM scale due to its low item performance, data collection was conducted, resulting in a strong internal consistency for the DM scale, as indicated by a Cronbach's alpha of 0.721. Cronbach alpha – reliability analysis

$$\alpha = (k / (k-1)) * (1 – (\Sigma s^2 / St^2)), \quad (2.1)$$

where: α is Cronbach's alpha coefficient; k is the number of items in the test; Σs ^2 is the variance of each item score; St^2 is the variance of the total test score (e.g., the sum of scores across all items).

Cronbach's alpha is a measure of internal consistency reliability, which assesses the degree to which items on a test are correlated with one another. Higher alpha coefficients show greater consistency or reliability of the test. A Cronbach's alpha of 0.70 or above is acceptable for most research purposes.

Exploratory Aspect Analysis

An EFA was conducted to confirm the relationship between the statements and the aspect they loaded on. The suitability of the data for aspect analysis can be tested by the Kaiser-Mayer-Olkin (KMO) coefficient and Barlett sphericity test.

As illustrated in the Table.2.5, KMO=0.777 ranges between 0 and 1. Bartlett's test tests the null hypothesis that the original correlation matrix is an identity matrix. As for Bartlett's test, the observed significance levels are sig<0.05; thus, the relationship among variables is strong. The results show all commonalities are above 0.5. The minimum aspect loading criteria was set to 0.6 (MacCallum et al.,1999, 2001). As a result, all aspect loadings are above 0.6.

Table 2.5. KMO and Bartlett's test and communalities

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin measure of sampling adequacy		0.777
Bartlett's test of sphericity	Approx. chi-square	1893.813
	Df	630
	Sig.	0.000

Communalities		
Criteria	Initial	Extraction
DM15	1.000	0.723
DM16	1.000	0.855
DM14	1.000	0.620
GPM1	1.000	0.697
GPM2	1.000	0.770
GPM3	1.000	0.694
GPM4	1.000	0.737
GPM5	1.000	0.819
GPM6	1.000	0.750
GPL1	1.000	0.729
GPL2	1.000	0.867
GPL3	1.000	0.833
GPL4	1.000	0.892
GPL5	1.000	0.818
GPL6	1.000	0.880
GPL7	1.000	0.782
GPL8	1.000	0.825
GPL9	1.000	0.869
GPL10	1.000	0.749
GHR1	1.000	0.683
GHR2	1.000	0.781
GHR3	1.000	0.890

End of Table 2.5

Communalities		
Criteria	Initial	Extraction
GHR4	1.000	0.836
EMG1	1.000	0.809
EMG2	1.000	0.628
EMG3	1.000	0.795
EMG4	1.000	0.734
EMG5	1.000	0.799
EMG6	1.000	0.871
EMG7	1.000	0.833
EMG8	1.000	0.765
EMG9	1.000	0.857
GFM1	1.000	0.811
GFM2	1.000	0.629
GFM3	1.000	0.800
GFM4	1.000	0.884

The exploratory aspect analysis (EFA) validity is ensured through the KMO coefficient (0.777), indicating dataset suitability, Bartlett's test (sig < 0.05) confirming strong variable correlation, and commonalities above 0.5, supporting data adequacy. Aspect loading criteria (minimum 0.6) ensure only robust relationships are considered, collectively establishing the robustness and validity of the extracted practices.

Presentation of Findings – Descriptive Statistics

As illustrated in the Table 2.6, the sample contains females (51.4%) and males (48.6%). 30.3% of participants were aged between 35–45, 24.3% were aged between 18 and 25, 22.1% were above 45, and 23.3% were between 25 and 35. Most participants (82%) have bachelor's or master's degrees. 28.0% of the participants have a middle-level job position, 25.8% at the senior level, 21.6% at upper management, and 24.6% at the junior level.

20.6% of the participants have less than two years of overall work experience, 19.4% have between 5 and 10 years of experience, and 39.5% have over ten years of overall work experience. 19.1% of the participants have over ten years of experience in banking companies, 17.9% have less than two years of experience, 9.9% between 2 and 5 years, and 13.4% between 5 and 10 years of experience in banking companies.

Most participants (85%) deal with banks' headquarters in Lebanon. Approximately 70% of participants said the bank they deal with has other branches outside Lebanon. Most participants have dealt with banks (86.1%).

This demographic distribution indicates a well-balanced sample in terms of gender, age, education, and work experience. The strong representation of experienced professionals enhances the credibility of stakeholder insights. Moreover, the diversity in banking exposure ensures a wide range of perspectives on sustainability practices.

Table 2.6. Descriptive statistics

Variable	Categories	Frequency	Percentage %
Age	18–24	98	24.3
	25–34	94	23.3
	35–44	122	30.3
	45+	89	22.1
Gender	Female	207	51.4
	Male	196	48.6
Education	Bachelor	172	42.7
	Master or above	156	38.7
	Other	75	18.6
Job position	Junior to middle-level	212	52.6
	Senior to upper management	191	47.4
Overall work experience	<2 years	83	20.6
	2–4 years	77	19.1
	5–9 years	78	19.4
	10+ years	159	39.5
Experience in banking	None	160	39.7
	<2 years	72	17.9
	2–4 years	40	9.9
	5–9 years	54	13.4
	10+ years	77	19.1
Ever dealt with banks	Yes	347	86.1
	No	56	13.9
Bank headquarters	Lebanon	345	85.6
	Outside Lebanon	26	6.5
	Not applicable	32	7.9

End of Table 2.6

Variable	Categories	Frequency	Percentage %
The bank has branches abroad	Yes	280	69.5
	No / Not applicable	123	30.5
Bank applies GM	Yes	278	69.0
	No / Don't know / Not applicable	125	31.0
Stakeholder type	A1–A3: Internal (employee, shareholder, and board)	138	34.2
	A4–A7: External (clients and suppliers)	225	55.8
	No current or past banking relationship	40	9.9

In conclusion, this diverse sample aligns well with the research objective of exploring sustainable management and stakeholder dynamics in banking. Representing various demographics, job levels, and experience, especially with Lebanese banks and international branches, the participants offer a comprehensive view of sustainable practices. Their high educational levels and extensive industry experience enrich the research, providing valuable insights into how sustainable management impacts banking operations and stakeholder engagement.

The descriptive Table 2.7 indicates that DM1 has the highest mean value of 3.73 with a standard deviation of 1.185, followed by DM3 with a mean of 3.61 and a standard deviation of 1.163. DM2 has the lowest mean value of 3.38, with a standard deviation of 1.085.

Table 2.7. Descriptive statistics for the items

Descriptive statistics for the items	N	Mean	Std. deviation	Ranking
DM1	403	3.73	1.185	1
DM2	403	3.38	1.085	3
DM3	403	3.61	1.163	2
GPM1	403	3.50	1.001	6
GPM2	403	3.68	1.005	1
GPM3	403	3.62	.991	5
GPM4	403	3.67	1.025	2

End of Table 2.7

Descriptive statistics for the items	N	Mean	Std. deviation	Ranking
GPM5	403	3.63	1.025	4
GPM6	403	3.63	1.001	3
GPL1	403	3.71	1.021	10
GPL2	403	3.83	1.016	4
GPL3	403	3.78	1.012	8
GPL4	403	3.78	1.010	7
GPL5	403	3.83	1.039	5
GPL6	403	3.92	1.011	1
GPL7	403	3.89	1.001	2
GPL8	403	3.81	1.019	6
GPL9	403	3.84	1.058	3
GPL10	403	3.73	.988	9
GHR1	403	3.64	1.066	2
GHR2	403	3.64	1.040	1
GHR3	403	3.57	1.042	4
GHR4	403	3.57	1.004	3
EMG1	403	3.68	1.010	1
EMG2	403	3.58	1.107	7
EMG3	403	3.68	1.027	2
EMG4	403	3.64	1.006	4
EMG5	403	3.48	1.061	9
EMG6	403	3.67	1.022	3
EMG7	403	3.59	.948	6
EMG8	403	3.61	.983	5
EMG9	403	3.57	.918	8
GFM1	403	3.55	1.017	2
GFM2	403	3.58	1.025	1
GFM3	403	3.41	1.034	3
GFM4	403	3.33	1.146	4

For green product management, the highest mean was for GPM2, with a mean of 3.68 and standard deviation of 1.005, followed by GPM4, with a mean of 3.67 and standard deviation of 1.025, followed by GPM6, with a mean of 3.63 and standard deviation of 1.001, followed by GPM5 with a mean of 3.63 and standard deviation of 1.025, followed by GPM3 with a mean of 3.62 and standard

deviation of 0.991, while the lowest mean was for GPM1 is 3.50 with a standard deviation of 1.001.

The descriptive statistics for the green platform management are as the highest mean was for GPL6 with a mean of 3.92 and a standard deviation of 1.011, followed by GPL7 with a mean of 3.89 and standard deviation of 1.001, followed by GPL9 and GPL2 and GPL5 with a mean of 3.83 and standard deviations of 1.039 and GPL8 followed by GPL4 with a mean of 3.84 and standard deviation of 1.058, followed by GPL3 and GPL10 while the lowest mean was for the GPL1 with a mean of 3.71 and standard deviation of 1.021.

The highest mean for green human resources management was for GHR1 and GHR2 at 3.64 with a standard deviation of 1.066 and 1.040, respectively, while the lowest mean was for GHR4 and GHR3 with a mean of 3.57 and a standard deviation of 1.004 and 1.042, respectively.

The highest mean for the environmental management green banking was for EMG1 and EMG3, with a mean of 3.68 and standard deviation of 1.010 and 1.027, respectively, while the lowest was for EMG5, with a mean of 3.48 and standard deviation of 1.061.

Finally, for green financial management, the highest mean was for GFM2, with 3.58 and a standard deviation of 1.025, while the lowest mean was GFM4, with a mean of 3.33 and a standard deviation of 1.146.

Through comprehensive statistical analysis, including descriptive statistics and structural equation modeling (SEM), this research establishes a clear hierarchy of sustainable management sub-criteria.

As illustrated in Table 2.8, these sub-criteria encompass decision-making, green product management, green platform management, green human resources, environmental management, and green financial management. The findings reveal that specific practices, like GPL6 in green platform management and EMG1 in environmental management, hold high importance for stakeholders, underscoring the role of targeted green initiatives in shaping strategic sustainability priorities within the banking sector.

Table 2.8. General ranking per sub-criteria by SEM

	General ranking per sub-criteria by SEM
DM	DM1>DM3>DM2
GPM	GPM2>GPM4>GPM6>GPM5>GPM3>GMP1
GPL	GPL6>GPL7>GPL9>GPL2>GPL5>GPL8>GPL4>GPL3>GPL10>GPL1
GHR	GHR2>GHR1>GHR4>GHR3
EMG	EMG1>EMG3>EMG6>EMG4>EMG8>EMG7>EMG2>EMG9>EMG5
GFM	GFM2>GFM1>GFM3>GFM4

By identifying these key sub-criteria and their ranking, the research fulfils its tasks of prioritizing effective, sustainable practices and offering banks an actionable framework for aligning their operations with stakeholder expectations and enhancing their competitive edge. The findings support strategic decision-making and serve as a practical guide for banks to adopt green practices that resonate with internal and external stakeholders, fostering long-term resilience and sustainability in a competitive market.

Reliability of Constructs and their Equations

The reliability test is represented in Table 2.9. The extent to which a measure is consistent with a concept and is related to data constancy. Cronbach's alpha will be used to assess the reliability of each scale and its corresponding items. Based on a five-point Likert scale, a Cronbach's alpha coefficient above 0.7 is considered acceptable, indicating good internal consistency.

The data results show that all constructs are reliable since Cronbach's values were computed above 0.7. The decision-making with three items shows very good internal consistency with Cronbach's alpha of 0.753.

The green product management with six items also indicates good internal consistency with Cronbach's alpha of 0.881 (Sachitra, 2016). The green platform management with ten items shows good internal consistency with a Cronbach's alpha of 0.940. The green human resources management with four items shows good internal consistency with Cronbach's alpha of 0.895. The environmental management, with nine items, shows very good internal consistency with a Cronbach's alpha of 0.906, and the green financial management, with a Cronbach's alpha of 0.872 with four items (Zangoueinezhad et al., 2011).

$$\text{The average variance extracted: AVE} = \sum K2 / n; \tag{2.2}$$

$$\text{Composite reliability: CR} = (\sum K)2 / [(\sum K)2 + (\sum 1 - K2)], \tag{2.3}$$

(K = aspect loading of every item and n = number of items in a model).

Chi-square (χ^2) measures the difference between the observed and predicted covariance matrix. A low chi-square value indicates a good fit.

Root means square error of approximation (RMSEA) measures the discrepancy between the model and the population covariance matrix, considering the degrees of freedom. A low RMSEA value (less than 0.05) indicates a good fit.

The comparative fit index (CFI) compares the hypothesized model with the null model, which is the model with no relationships among the variables. A CFI value of 0.95 or higher indicates a good fit.

Tucker-Lewis index (TLI) also compares the hypothesized model with the null model. A TLI value of 0.95 or higher indicates a good fit (Horváthová, 2010).

The IFI compares the fit of the hypothesized model to the fit of the null model, which represents a model with no relationships among the variables.

A higher IFI indicates a better fit for the hypothesized model than the null model.

Table 2.9. Reliability of constructs

Reliability of constructs		
Scale	Cronbach's alpha	Number of items
Decision making	0.753	3
Green product management	0.881	6
Green platform management	0.940	10
Green human resources management	0.895	4
Environmental management	0.906	9
Green financial management	0.872	4

The statistical results generated through structural equation modeling (SEM) and the analytic hierarchy process (AHP) directly address the research questions by identifying and quantifying the impact of specific sustainable management practices on green competitiveness in the Lebanese banking sector. SEM was instrumental in testing the research hypotheses by examining the interrelationships among critical criteria, e.g., green product management, environmental management, and green HR. These analyses confirmed that each criterion significantly contributes to green competitiveness by enhancing environmental responsibility and aligning with stakeholder expectations. This provides concrete answers to which sustainable practices are most effective within this sector. The findings from SEM, validated through model fit indices like RMSEA, CFI, TLI, and IFI, affirm the robustness of the model, indicating that sustainable practices can be systematically integrated into Lebanese banks' operations to meet environmental and business goals.

Beyond answering the research questions, these findings have broader implications for sustainable banking practices in emerging markets. The use of AHP to prioritize sustainability criteria based on stakeholder inputs highlights the importance of tailoring sustainable management strategies to regional and institutional contexts. AHP's pairwise comparison technique allows for a hierarchical ranking of practices, revealing that stakeholders prioritize initiatives that directly impact environmental and social governance. This insight provides actionable guidance for banks, suggesting that resources should be focused on high-impact

practices that resonate with internal and external stakeholders, such as energy-efficient initiatives and employee training in sustainability.

SEM and AHP comprehensively respond to the research questions by verifying the model's effectiveness and demonstrating the practicality of implementing these sustainable practices. The broader implication of this approach is that Lebanese banks, and potentially other banks in emerging markets, can achieve green competitiveness by systematically aligning sustainability efforts with stakeholder priorities. This alignment reinforces the research's core objective of creating a sustainable management model that is both theoretically grounded and practically adaptable, offering a replicable framework for other institutions facing similar regional constraints.

2.6. Research Model – Confirmatory Aspect Analysis

Measurement Model – Drawing and Validating the Model

Structural equation modeling (SEM) is the basis of a confirmatory aspect analysis (CFA). It evaluates the model of the research by comparing accurate and theoretical data using aspect analysis, model measurement, and path analysis. The results were provided using IBM AMOS 24.0. Table 2.10 presents the standardized aspect loadings for each construct, demonstrating how observed variables load onto their respective latent constructs. Higher loading values indicate stronger relationships between indicators and their constructs, ensuring the model's validity and robustness.

The confirmatory aspect analysis (CFA) was conducted to assess the model's fitness, validity, and reliability of the measurements for each construct before testing the relations using the structural model. The results of CFA showed a good model with an aspect loading above 0.5 and an acceptable fit model (CMIN/df=2.634, TLI=0.900, RMSEA=0.064, CFI=0.907, IFI=0.908) and the construct validity was met (Khvesyk et al., 2018).

The convergent validity was also met by calculating the average variance extracted (AVE). AVE for all constructs was above 0.5, and the construct reliability for all constructs was met as the CR for all constructs was above 0.7 (Igbudu, Garanti & Popoola, 2018).

Finally, the discriminant validity is measured to detect any redundant statements in the measurement model, and it was established for all practices. The results show that AVE was more significant than the squared correlation between each pair of constructs, thus providing evidence for discriminant validity (Dubey et al., 2017).

These findings confirm that the measurement model is both statistically sound and theoretically coherent. The validated constructs provide a strong foundation for evaluating the structural relationships in the next phase of analysis. Overall, the robust psychometric properties enhance the credibility of the research outcomes.

Table 2.10. Standardized aspect loading

Standardized aspect loading			Estimate
GPM1	<–––	GPM	.690
GPM2	<–––	GPM	.747
GPM3	<–––	GPM	.734
GPM4	<–––	GPM	.758
GPM5	<–––	GPM	.761
GPM6	<–––	GPM	.771
GPL10	<–––	GPL	.771
GPL9	<–––	GPL	.794
GPL8	<–––	GPL	.816
GPL7	<–––	GPL	.782
GPL6	<–––	GPL	.812
GPL5	<–––	GPL	.767
GPL4	<–––	GPL	.756
GPL3	<–––	GPL	.781
GPL2	<–––	GPL	.812
GPL1	<–––	GPL	.720
GHR4	<–––	GHR	.841
GHR3	<–––	GHR	.847
GHR2	<–––	GHR	.842
GHR1	<–––	GHR	.778
EMG9	<–––	EMG	.754
EMG8	<–––	EMG	.779
EMG7	<–––	EMG	.757
EMG6	<–––	EMG	.795
EMG5	<–––	EMG	.684
EMG4	<–––	EMG	.776
EMG3	<–––	EMG	.716
EMG2	<–––	EMG	.610

End of Table 2.10

Standardized aspect loading			Estimate
EMG1	<–––	EMG	.640
GFM4	<–––	GFM	.755
GFM3	<–––	GFM	.754
GFM2	<–––	GFM	.835
GFM1	<–––	GFM	.819
DM1	<–––	DM	.756
DM2	<–––	DM	.805
DM3	<–––	DM	.612

The formulas for these fit indices are as follows:
Chi-square (χ^2) formula:

$$\chi^2 = \Sigma \text{ [(observed covariance – predicted covariance) / estimated standard error of covariance] ^2.} \quad (2.4)$$

Root means square error of approximation (RMSEA) formula:

$$\text{RMSEA} = \sqrt{} \text{ [} (\chi^2 - df) / (n * (n-1))] * [\text{sqrt } (2\ (n-2)) / 2]. \quad (2.5)$$

Comparative fit index (CFI) formula:

$$\text{CFI} = (\chi^2\text{null} - \chi^2\text{model}) / \chi^2\text{null} . \quad (2.6)$$

Tucker-Lewis index (TLI) formula:

$$\text{TLI} = (\text{CFI} - 1) / (df / n - 2) . \quad (2.7)$$

IFI stands for incremental fit index

$$\text{IFI} = (\chi\text{^2null} - \chi\text{^2})/\chi\text{^2null}, \quad (2.8)$$

where: χ^2 is the chi-square value of the fitted model; χ^2null is the chi-square value of the null model (e.g., a model with no paths or parameters specified).

Standardized regression coefficients

$$\beta j = \text{cov } (Xj, Y) / \text{var } (Xj), \quad (2.9)$$

where: βj is the regression coefficient for the jth predictor variable; cov (Xj, Y) is the covariance between the jth predictor variable and the response variable; var (Xj) is the variance of the jth predictor variable.

The standard error (SE)

$$\text{SE } (\beta) = \text{sqrt } \{[1 / (n - p)] * [1 / (1 - R\_AB\text{^2})] * [\ (1 - \beta\text{^2}) * \text{SSY} / (\text{SSX\_B} * \text{SSY})]\}, \quad (2.10)$$

where: n is the sample size; p is the number of estimated parameters in the model; R_AB is the correlation between latent variables A and B; β is the estimated path coefficient; SSX_B is the sum of squares for latent variable B; SSY is the sum of squares for the dependent variable (or response variable).

Table 2.11. Results of the measurement model assessment

Variable	Item	Aspect loading	CR	AVE
Decision-making	DM1	0.756	0.771	0.532
	DM2	0.805		
	DM3	0.612		
Green product management	GPM1	0.690	0.881	0.554
	GPM2	0.747		
	GPM3	0.734		
	GPM4	0.758		
	GPM5	0.761		
	GPM6	0.771		
Green platform management	GPL1	0.720	0.940	0.611
	GPL2	0.812		
	GPL3	0.781		
	GPL4	0.756		
	GPL5	0.767		
	GPL6	0.812		
	GPL7	0.782		
	GPL8	0.816		
	GPL9	0.794		
	GPL10	0.771		
Green human resources management	GHR1	0.778	0.897	0.685
	GHR2	0.842		
	GHR3	0.847		
	GHR4	0.841		
Environmental management green banking	EMG1	0.640	0.909	0.527
	EMG2	0.610		
	EMG3	0.716		
	EMG4	0.776		
	EMG5	0.684		
	EMG6	0.795		
	EMG7	0.757		

End of Table 2.11

Variable	Item	Aspect loading	CR	AVE
	EMG8	0.779		
	EMG9	0.754		
Green financial management	GFM1	0.819	0.870	0.627
	GFM2	0.835		
	GFM3	0.754		
	GFM4	0.755		

Table 2.11 evaluates the measurement model by presenting key assessment indicators, including composite reliability (CR) and average variance extracted (AVE). CR values above 0.7 indicate strong internal consistency, while AVE values above 0.5 confirm that the majority of variance is captured by the construct rather than measurement error.

On the other hand, Table 2.12. assesses discriminant validity by comparing AVE values with squared correlations between constructs. Discriminant validity is confirmed when the AVE values exceed the squared correlation values, ensuring that constructs are distinct and measure separate aspects of sustainable management practices. In the context of this research, the comparison validates that the constructs used to assess various aspects of sustainable management practices—such as stakeholder engagement, environmental initiatives, and governance strategies—are conceptually and empirically independent. This confirmation is critical, as overlapping constructs may distort the interpretation of structural relationships in later stages of analysis. Establishing discriminant validity at this stage thus supports the integrity of the model and the credibility of subsequent findings derived from structural equation modeling.

Table 2.12. Discriminant validity

Variable			Aspect correlation	Correlation squared	AVE1, AVE2 (AVEs should be >r2)	Discriminant validity
DM	<-->	GPM	.731	0.530	0.532; 0.611	Established
GPM	<-->	EMG	.711	0.505	0.611; 0.527	Established
GPM	<-->	GFM	.760	0.578	0.611; 0.627	Established
GPM	<-->	GHR	.710	0.504	0.611; 0.685	Established
GPM	<-->	GPL	.713	0.501	0.611; 0.611	Established
DM	<-->	EMG	.636	0.404	0.532; 0.527	Established
DM	<-->	GFM	.553	0.306	0.532; 0.627	Established
DM	<-->	GHR	.548	0.300	0.532; 0.685	Established

End of Table 2.12

Variable			Aspect correlation	Correlation squared	AVE1, AVE2 (AVEs should be >r2)	Discriminant validity
DM	<-->	GPL	.544	0.296	0.532; 0.611	Established
EMG	<-->	GFM	.656	0.430	0.527; 0.627	Established
GHR	<-->	EMG	.526	0.276	0.685;0.527	Established
GPL	<-->	EMG	.540	0.291	0.611; 0,527	Established
GHR	<-->	GFM	.691	0.477	0.685;0.627	Established
GPL	<-->	GFM	.607	0.368	0.611;0.627	Established
GPL	<-->	GHR	.701	0.491	0.611;0.685	Established

The results describe drawing and validating the measurement model using structural equation modeling (SEM) and confirmatory aspect analysis (CFA).

Structural equation modeling (SEM) is a statistical technique that tests and estimates relationships between observed and latent variables.

In the context of this research, SEM serves as the foundation for confirmatory aspect analysis. Confirmatory aspect analysis (CFA) is a statistical method employed to assess the validity and reliability of a measurement model. It evaluates how well the observed variables (indicators) align with the hypothesized latent constructs or practices.

After performing confirmatory factor analysis (CFA), the model's fit is assessed using various fit indices within the model fitness assessment to ensure its validity and robustness. These indices include:

- Chi-square (χ^2) is a measure of the difference between the observed and predicted covariance matrices. A lower chi-square value indicates a better fit.

Root mean square error of approximation (RMSEA) measures the discrepancy between the observed data and the model, with lower values indicating a better fit.

- Comparative fit index (CFI) and Tucker-Lewis index (TLI) assess how well the model fits the data compared to a null model. Higher values indicate a better fit.

The reported values for CMIN/df, TLI, RMSEA, CFI, and IFI indicate the model's acceptability and fitness.

- Convergent validity is assessed by calculating each construct's average variance extracted (AVE) and construct reliability (CR). AVE measures the amount of variance captured by the construct's indicators, and CR assesses the internal consistency of the indicators. AVE and CR values above 0.5 and 0.7 indicate good convergent validity.

- Discriminant validity ensures that each construct is distinct. It is evaluated by comparing the AVE with the squared correlation between each pair of constructs. Discriminant validity is supported if the AVE is greater than the squared correlation.

The formulas outline the calculations for key fit indices such as chi-square, RMSEA, CFI, TLI, and IFI. These indices provide quantitative measures of how well the model fits the observed data.

- Standardized regression coefficients and standard error. The formulas for standardized regression coefficients (βj) and standard errors (SE) are given. These coefficients quantify the strength and direction of the relationships between predictor and response variables, while standard errors measure the estimates' precision.

The findings outline a thorough process for developing and validating a measurement model, ensuring alignment with observed data, and meeting criteria for validity and reliability. The detailed insights into these methods enable researchers to explore the nuances of model evaluation deeply.

Explanations of fit indices clarify their roles in overall model assessment, promoting a comprehensive analysis of the analytical process and critical evaluation of model integrity. Beyond technicalities, discussing standardized regression coefficients and standard errors enhances the model's interpretability. Researchers gain numerical results and a profound analysis of how predictor variables impact response variables.

This nuanced comprehension, supported by precise metrics of standard errors, enriches interpretations of the model's predictive capabilities.

Overall, these findings serve as a guide for navigating complex measurement modeling and as an educational tool to deepen researchers' grasp of evaluative techniques.

They underscore a commitment to methodological rigour, equipping the research community to conduct advanced analyses and contribute meaningfully to knowledge advancement in their fields.

These findings underscore the critical role of rigorous methodological practices in ensuring the reliability and validity of measurement models. By offering a clear framework for model evaluation, researchers can confidently navigate complex analytical processes. Integrating fit indices, standardized coefficients, and standard errors enhances interpretability, fostering a deeper understanding of the relationships between variables.

This comprehensive approach equips the research community with tools to conduct advanced, impactful analyses, driving meaningful contributions to their respective fields.

Figure 2.2 illustrates the research model developed using structural equation modeling (SEM) via AMOS, incorporating validity indicators to assess the measurement model's reliability and fitness.

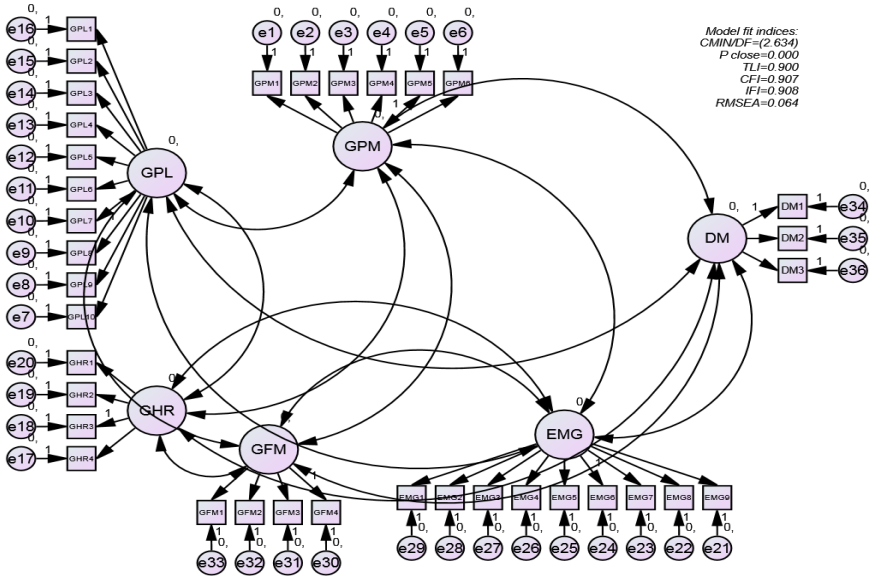


Fig 2.2. Research model via SEM–AMOS with validity indicators

This visual representation highlights the relationships between key sustainable management constructs, such as green product management, environmental management, and green HR, and their influence on stakeholder decision-making. The model's structure ensures a comprehensive evaluation of how sustainability initiatives contribute to green competitiveness within the banking sector. By validating these constructs through confirmatory factor analysis (CFA), the research establishes a strong empirical foundation for integrating sustainability into banking strategies. The results derived from this model offer practical insights for financial institutions aiming to enhance sustainable practices while maintaining regulatory compliance and stakeholder engagement.

The confirmatory factor analysis (CFA) conducted as part of the structural equation modeling (SEM) process was essential in validating the research model, directly addressing the research questions about how specific sustainable practices influence green competitiveness in the Lebanese banking sector. By assessing the measurement model's fitness and reliability, the CFA results supported the relevance and impact of critical green management practices, e.g., green product management, environmental management, and green HR, on stakeholders' decision-

making. Each construct met the validity thresholds, with standardized loading values exceeding 0.5 and fit indices (e.g., CMIN/df, TLI, RMSEA, CFI, and IFI) confirming an acceptable model fit, thereby establishing the model's alignment with the objectives of quantifying the effects of sustainability on competitiveness.

Through this confirmatory analysis, the model validates these practices as significant drivers of stakeholder engagement and highlights their contributions to fostering a green competitive advantage. For instance, the high factor loading values of environmental management underscore its critical role in addressing stakeholder demands for eco-friendly practices.

This supports the research question regarding prioritizing sustainable practices based on stakeholder input. It aligns with broader research objectives by offering a model that banking institutions can adapt to enhance their green market positioning.

The validated model's implications are significant, providing Lebanese banks and potentially other emerging market institutions with an empirically backed framework to align sustainable initiatives with local regulatory requirements and global sustainability standards. In addition to addressing the core research questions, these findings offer broader implications.

The model developed here provides a foundation for expanding sustainable banking practices beyond Lebanon, as it integrates criteria that resonate with universal stakeholder concerns, such as environmental impact and resource efficiency.

By establishing a replicable framework for prioritizing sustainable practices, this research contributes valuable insights that can guide banking institutions worldwide in developing green strategies that align operational goals with sustainability imperatives, thus bridging a critical gap in sustainable management research in emerging economies revised paragraph connects the confirmatory analysis results to the research questions and elaborates on the implications within and beyond the Lebanese banking context, enhancing clarity and relevance.

2.7. Hypothesis Testing Using Structural Equation Modeling

SEM is a technique developed because of some limitations in the traditional ordinary least squares (OLS), especially when dealing with latent constructs. The Hypotheses were tested in this research to verify the causal relationship between independent and dependent variables. Alpha values were set at 5% to test the hypotheses. Standardized coefficients were used to assess causality, and the estimation method employed was "Maximum Likelihood for SEM."

The regression coefficient analysis in Table 2.13 demonstrates that green product management (GPM) has a significant positive influence on decision-making (DM). A 1% increase in GPM leads to an increase in decision-making by 0.797, with a standard error of 0.153 and a p-value of 0.0000001 (<0.0001), confirming its strong impact.

Similarly, environmental management (EMG) also exhibits a positive effect on decision-making, where a 1% increase in EMG results in a 0.295 increase in decision-making, with a standard error of 0.151 and a p-value of 0.032 (<0.05), indicating statistical significance.

Table 2.13. Regression coefficients

Construct	Path	Construct	Standardized coefficient	S.E.	P-value	Result
DM	←	GPM	0.797	0.153	0.000001***	Significant
DM	←	GPL	–0.123	0.108	0.219	Not significant
DM	←	GHR	–0.187	0.125	0.128	Not significant
DM	←	GFM	–0.070	0.125	0.561	Not significant
DM	←	EMG	0.295	0.151	0.032**	Significant

***<0.0001; **<0.05

The hypotheses related to GPM and EMG were accepted, while the hypotheses regarding the influence of green platform leadership (GPL), green human resource management (GHR), and green financial management (GFM) on decision-making were not supported, as their p-values exceeded the 0.05 threshold. The order of significance based on the p-values follows: GPM > EMG > GHR > GPL > GFM, indicating that GPM and EMG are the most influential factors in decision-making within sustainable banking practices.

Accepted Hypotheses:

H1: *Green product management* (GPM) positively influences stakeholder decision-making in the banking sector.

This hypothesis is supported by the standardized coefficient for GPM, which is 0.797 with a very low p-value (0.000001), indicating a significant positive influence on decision-making.

H4: *Environmental Management (*EMG) positively influences stakeholder decision-making in the banking sector.

This hypothesis is supported by a standardized coefficient of 0.295 and a significant p-value of 0.032, which positively influences decision-making.

Rejected Hypotheses:

H2: Green platform management (GPL) positively influences stakeholder decision-making in the banking sector.

This hypothesis is rejected as the standardized coefficient for GPL is -0.123 with a non-significant p-value of 0.219, indicating no significant influence on decision-making.

H3: Green human resources (GHR) management positively influences stakeholder decision-making in the banking sector.

This hypothesis is rejected as the standardized coefficient for GHR is -0.187 with a non-significant p-value of 0.128, indicating no significant influence on decision-making.

H5: Green financial management (GFM) positively influences stakeholder decision-making in the banking sector.

This hypothesis is rejected as the standardized coefficient for GFM is -0.070 with a non-significant p-value of 0.561, indicating no significant influence on decision-making.

Retained Hypotheses:

H6: Stakeholder (internal and external) decision-making positively influences green competitiveness in the banking sector.

This hypothesis is retained based on the analysis that decision-making (DM) in response to influential factors like GPM and EMG can enhance green competitiveness despite the specific influences of GPL, GHR, and GFM not being significant.

The hypotheses reflect the findings from the regression analysis. While GPM and EMG positively influence stakeholder decision-making in the banking sector, GPL, GHR, and GFM do not exhibit significant influence based on the regression results.

Therefore, GPL, GHR, and GFM hypotheses are rejected, whereas those associated with GPM, EMG, and the overall influence of stakeholder decision-making on green competitiveness are accepted.

These findings clarify which factors significantly contribute to decision-making processes within the banking sector's green management context.

Table 2.14 presents a structured summary of the ranking results, providing a comprehensive evaluation of key sustainability criteria based on their influence and significance.

This ranking facilitates informed decision-making and strategic alignment with sustainability objectives. It also highlights priority areas where organizations should focus their sustainability efforts. These insights can support the development of targeted initiatives that enhance long-term environmental and operational performance.

Table 2.14. Order of importance of constructs

	Ranking per criteria	Ranking per sub-criteria
DM	-	DM1>DM3>DM2
GPM	1	GPM2>GPM4>GPM6>GPM5>GPM3>GMP1
GPL	4	GPL6>GPL7>GPL9>GPL2>GPL5>GPL8>GPL4>GPL3>GPL10>GPL1
GHR	3	GHR2>GHR1>GHR4>GHR3
EMG	2	EMG1>EMG3>EMG6>EMG4>EMG8>EMG7>EMG2>EMG9>EMG5
GFM	5	GFM2>GFM1>GFM3>GFM4

The decision-making criteria (DM1, DM2, and DM3) aligned with the sustainability framework of the planet, profit, and people reveal insightful statistics:

DM1 (decision-making based on environmental support concern) has a mean of 3.73 with a standard deviation of 1.185. This criterion corresponds to the "planet" component, emphasizing stakeholders' high regard for environmental considerations in decision-making processes.

DM2 (decision-making based on profit concern) shows a mean of 3.38 and a standard deviation of 1.085. While profit remains a significant factor (aligned with the "profit" component), the lower mean suggests it is considered less critical than environmental support (DM1).

DM3 (decision-making based on reputation concern) has a mean of 3.61 and a standard deviation of 1.163, aligning with the "people" component. Stakeholders value decisions that positively impact reputation, reflecting a moderate emphasis on social sustainability aspects.

In summary, stakeholders prioritize decision-making aligned with environmental sustainability (DM1), reflecting a strong emphasis and variability. Decision-making influenced by profit (DM2) is still essential but perceived as less

critical compared to environmental concerns. Decision-making focused on reputation (DM3) is moderately valued, highlighting its importance in shaping public perception and stakeholder relations.

- Green product management (GPM) is ranked 1st in importance among the constructs. Within green product management (GPM), stakeholders prioritize green home modernization loans (GPM2), green debit/credit cards (GPM4), low-charge insurance premiums for eco-friendly actions (GPM6), green reward systems (GPM5), sustainability-linked loans (GPM3), and green mortgages (GPM1) in descending order. This suggests a clear hierarchy where aspects related to green banking products and incentives are deemed crucial for project management efficiency and sustainability.
- Green platform management (GPL) holds the 4th important rank. Stakeholders prioritize R&D green innovative activities (GPL5), SWIFT system (GPL9), online payment gateway service (GPL7), ICT skills (GPL2), technical assistance (TA) (GPL10), express cash system (GPL8), mobile/SMS banking (GPL6), ICT management (GPL3), fintech development (GPL4), and digital finance as digital banking (GPL1). This wide range indicates a distributed focus across leadership aspects encompassing technological innovation, digital transformation, and strategic banking leadership.
- Green HR management (GHR) ranks 3rd in importance. Prioritization is given to green training (GHR2), green human skills by green awareness (GHR1), green expertise (GHR4), and green human management by green recruitment (GHR3). This underscores a significant emphasis on developing green-aware human resources to drive sustainable practices and organizational resilience.
- Environmental management (EMG) is ranked 2nd in importance.
- Stakeholders emphasize using renewable energy (EMG4), green annual report (EMG5), paperless banking (EMG2), people green awareness and green orientation programs (EMG7), energy saving (EMG1), collaboration with other sectors/organizations for yearly green goals (EMG8), refusing the support of polluting businesses (EMG3), green community activities (EMG6), and green campaigns to encourage green projects (EMG9). This detailed hierarchy reflects a comprehensive approach to environmental sustainability, governance, and sustainability practices within banking management.
- Green financial management (GFM) ranks 5th in importance among the constructs. Stakeholders prioritize green private equity funds (GFM2), green venture capital (GFM1), green bonds (GFM4), and green brokerage (GFM3). This hierarchy highlights the importance of integrating

green banking instruments and investment strategies into banking management frameworks.

These rankings reflect a strategic focus on integrating sustainability into all facets of banking management, from product development and platform innovation to human resource practices and environmental management. This holistic approach enhances organizational resilience and efficiency and supports long-term value creation and stakeholder engagement in sustainable finance initiatives. By prioritizing these areas, organizations can effectively navigate the complexities of sustainable development while driving positive environmental and social impacts.

The structural equation modeling (SEM) analysis confirms that green management criteria significantly influence stakeholder decision-making, particularly concerning environmental support, profitability, and reputation. By validating these hypotheses, this research advances the field's understanding of how specific sustainable practices, such as GHR and EMG, directly affect banking operations and competitiveness. These findings address the research objective of identifying green management's impact and underscore the potential for sustainable banking practices to foster a proactive, stakeholder-centred approach (Drago et al., 2024).

2.8. Integrating Mixed Methods

In the Second Chapter, the analytic hierarchy process (AHP) is the supportive quantitative method (AHP-MCDM) for evaluating and prioritizing sustainability criteria within the banking sector. AHP-MCDM structures decision-making by establishing hierarchies of criteria and conducting pairwise comparisons to determine their relative importance. This method quantitatively assesses criteria such as green products and environmental management identified in the research, offering structured insights into stakeholder perceptions and priorities. In this search, MCDM serves as the overarching decision-making framework, encompassing various methods such as AHP, TOPSIS, PROMETHEE, and ELECTRE. However, this research exclusively applies MCDM through AHP, utilizing its hierarchical structuring and pairwise comparison approach to evaluate and prioritize sustainability criteria. This method sets the stage for more profound analysis using the subsequent methodology, notably the mixed method with structural equation modeling (SEM). This approach builds on initial rankings to elucidate relationships between criteria and internal/external stakeholder decision-making. AHP involves creating a hierarchy, conducting pairwise comparisons, and synthesizing judgments to determine overall priorities. It includes rating alternatives and establishing criteria weights through comparisons, normalization, and averaging. The process concludes by calculating weighted average ratings for decision alternatives to identify the optimal choice. As illustrated in Table 2.15, AHP was applied

to assess how green management practices influence stakeholder decision-making in the banking sector. Initially, specific criteria were defined to evaluate these practices thoroughly. Experts participated in a multi-criteria decision-making assessment, structuring the decision problem into hierarchies and conducting pairwise comparisons to determine criterion weights. Their insights provided diverse perspectives on stakeholder priorities regarding green management practices.

To validate findings comprehensively, opinions from ten experts were gathered through two rounds of assessments to ensure robustness and consensus in criteria weighting. Consistency checks, like the consistency ratio (CR), were applied to verify the logical coherence of pairwise comparisons.

The two rounds of assessments enabled experts to refine their initial judgments and reach a consensus on the importance of different criteria. In the first round, experts independently evaluated the criteria, leading to variations in rankings. Feedback was then provided, highlighting discrepancies and allowing experts to reconsider their assessments.

In the second round, experts revised their rankings, reducing inconsistencies and improving reliability. This iterative process ensured greater accuracy, minimized bias, and strengthened consensus, ultimately enhancing the research's validity and robustness.

Table 2.15. Weighted average rating for each decision alternative

	C1	C2	C3	C4	C5	TOTAL	AVERAGE
C1	1	9	3	0.25	0.5	13.8	2.75
C2	0.11	1	3	0.20	1	5.31	1.06
C3	0.33	0.333	1	0.50	0.25	2.42	0.48
C4	4	5	2	1	9	21	4.2
C5	2	1	4	0.11111	1	8.11	1.62
TOTAL	7.44	16.33	13	2.06111	11.75	42.5	8.5
SUM	7.77	8.629	13.8578	12.9569	12.54467	-	-

Once the criteria weights were determined through AHP, a multi-criteria scoring method was applied to assess how each identified green management practice influences stakeholder decision-making within the banking sector. This method quantitatively evaluated the impact of each criterion based on the weights established in the AHP process.

In Table 2.16, the scoring provided a detailed analysis of different green management practices' relative importance and influence on stakeholder decisions. The application of AHP in this context encompassed rigorous criteria selection,

statistical analysis, integration of expert opinions through multi-criteria decision-making assessments, consistency checks, and detailed multi-criteria scoring.

These steps collectively ensured a comprehensive and validated approach to comprehending the effects of green practices on stakeholder decision-making within the banking sector.

Table 2.16. Normalized matrix and average matrix – steps 1 and 2 of AHP-MCDM

Normalized matrix (Step 1)								
	C1	C2	C3	C4	C5	TOTAL	AVERAGE	CONSISTENCY MEASURE
C1	0.01116	0.25502	0.18424	0.110485748	0.22	0.782	0.156375145	14.92792
C2	0.00124	0.02834	0.18424	0.088388599	0.44	0.744	0.148829544	8.841649
	C1	C2	C3	C4	C5	TOTAL	AVERAGE	CONSISTENCY MEASURE
C3	0.00372	0.00945	0.06141	0.220971497	0.11	0.406	0.081207151	10.28274
C4	0.04464	0.14168	0.12283	0.441942993	3.98	4.729	0.945714264	9.442751
C5	0.02232	0.02834	0.24565	0.049104777	0.44	3.585	0.716929745	2.24348
TO-TAL	0.06076	0.43448	0.55272	0.861788837	4.75	6.661	1.332126104	43.49506

Average matrix (Step 2)									
	C1	C2	C3	C4	C5	TOTAL	AVERAGE	CONSIS-TENCY	RANK BY CIx
C1	0.01	0.019	0.013	0.008	0.021	0.0718	0.01437	5.446785982	6 = rank (2)
C2	0.02	0.028	0.035	0.017	0.107	0.2039	0.04078	4.74365573	5 = rank (1)
C3	0.05	0.05	0.061	0.091	0.059	0.3131	0.06261	5.438834683	5 = rank (1)
C4	0.61	0.752	0.297	0.442	0.244	2.349	0.46979	6.00764764	6 = rank (2)
C5	0.31	0.15	0.594	0.442	0.569	2.0622	0.41245	5.08956989	5 = rank (1)
TO-TAL	1	1	1	1	1	5	1	26.72649393	
						CI	0.08632		
						RI	1.12		
					CR	RATIO	0.06122	<0.1	

As per this table, the analysis reveals that criteria C2 (green platform management – GPL), C3 (green HR management – GHR), and C5 (green financial management – GFM) held equal weight in their respective rankings. Meanwhile, criteria C1 (green products – GPM) and C4 (environmental management – EMG) ranked slightly higher than the others.As illustrated in Table 2.17, the AHP-MCDM analysis revealed a positive relationship between the constructs, but assigning distinct weights to the criteria proved challenging, as they were all considered nearly equally important. This uniform distribution indicates that AHP-MCDM alone is insufficient for prioritising one criterion over another.

Therefore, complementary methods or qualitative insights may be necessary to capture nuanced stakeholder preferences and support more differentiated decision-making. Structural equation modeling (SEM) was integrated to overcome this limitation, which provided a more nuanced ranking of the criteria and better captured the complex relationships and their impacts on stakeholder decisions. The rankings obtained from SEM were initially utilized to calculate the weighted average, ensuring a more precise representation of each criterion's relative importance and influence. The average global weights from the AHP-MCDM analysis were then incorporated.

Table 2.17. Conclusion of MCDM-AHP and SEM-AMOS methods

Conclusion of MCDM-AHP & SEM-AMOS methods	SEM rank	Sum average global weights (AHP)	MCDM weighted result	Mixed method's rank by category
A1 – EMPLOYEES				
C1 – GREEN PRODUCTS	1	4.5	4.5	1
C2 – GREEN PLATFORM	5	4.1	20.5	4
C3 – GREEN HR	3	4.2	12.6	3
C4 – ENVIRONMENTAL MNG	2	4.3	8.6	2
C5 – GREEN BANKING MNG	4	4.1	16.4	4
Total		0	62.6	1.00
A2 – SHAREHOLDERS				
C1 – GREEN PRODUCTS	1	4.1	4.1	1
C2 – GREEN PLATFORM	5	3.2	16	4
C3 – GREEN HR	3	1.8	5.4	5
C4 – ENVIRONMENTAL MNG	2	4	8	2
C5 – GREEN BANKING MNG	4	3.9	15.6	3
Total		0	49.1	4.00
A3 – BOARD OF DIRECTORS				
C1 – GREEN PRODUCTS	1	4.9	4.9	1
C2 – GREEN PLATFORM	5	4.6	23	2
C3 – GREEN HR	3	2.8	8.4	5

End of Table 2.17

Conclusion of MCDM-AHP & SEM-AMOS methods	SEM rank	Sum average global weights (AHP)	MCDM weighted result	Mixed method's rank by category
C4 – ENVIRONMENTAL MNG	2	3	6	4
C5 – GREEN BANKING MNG	4	3.1	12.4	3
Total		0	54.7	2.00
A4 – INDIVIDUAL CLIENTS				
C1 – GREEN PRODUCTS	1	3.8	3.8	3
C2 – GREEN PLATFORM	5	2.7	13.5	5
C3 – GREEN HR	3	2.8	8.4	4
C4 – ENVIRONMENTAL MNG	2	4.5	9	1
C5 – GREEN BANKING MNG	4	4.3	17.2	2
Total		0	51.9	3.00
A5 – SMEs				
C1 – GREEN PRODUCTS	1	4.4	4.4	1
C2 – GREEN PLATFORM	5	2.4	12	4
C3 – GREEN HR	3	1.6	4.8	5
C4 – ENVIRONMENTAL MNG	2	4	8	2
C5 – GREEN BANKING MNG	4	3.4	13.6	3
Total		0	42.8	5.00
A6 – BIG CORPORATES				
C1 – GREEN PRODUCTS	1	4	4	1
C2 – GREEN PLATFORM	5	2.3	11.5	4
C3 – GREEN HR	3	1.6	4.8	5
C4 – ENVIRONMENTAL MNG	2	3.9	7.8	2
C5 – GREEN BANKING MNG	4	3.2	12.8	3
Total		0	40.9	6.00
A7 – SUPPLIERS				
C1 – GREEN PRODUCTS	1	3.7	3.7	5
C2 – GREEN PLATFORM	5	2.3	11.5	2
C3 – GREEN HR	3	1.6	4.8	4
C4 – ENVIRONMENTAL MNG	2	3.7	7.4	3
C5 – GREEN BANKING MNG	4	3.1	12.4	1
Total		0	39.8	7.00

By multiplying the SEM rankings with the AHP average global weights, the weighted average for each criterion was determined. The methodology followed a structured approach: first, SEM rankings were identified to establish the rank for each criterion; next, the average weights were extracted from the AHP-MCDM analysis; finally, the weighted average was computed by multiplying the SEM rank by each criterion's corresponding AHP average weight. The sum of these

products generated the overall weighted average for each criterion. Thus, the survey responses were analyzed to assess stakeholder perspectives on sustainable banking practices and their impact on green competitiveness. The detailed survey results are documented in Annex C. This mixed-methods approach offers multiple advantages. By integrating SEM rankings with AHP weights, the accuracy of the analysis was enhanced, providing a more precise reflection of the significance of each criterion. Additionally, it facilitated a comprehensive evaluation by leveraging the strengths of both AHP-MCDM and SEM, ensuring that decisions were grounded in empirical data and nuanced relational insights.

The resulting weighted averages provide actionable insights for prioritizing sustainable management practices in the banking sector, aligning with stakeholder perspectives. By integrating SEM rankings with AHP-MCDM average weights, this approach effectively addresses the limitations of relying solely on AHP-MCDM. It establishes a robust framework for weighting criteria, enabling banking institutions to accurately prioritize sustainable management practices and align their strategies with sustainability objectives. The Integration of mixed methods (AHP-MCDM and SEM approaches) explains the methodological structure supporting hypothesis testing.

It details how AHP-MCDM is used to determine the relative importance of sustainability criteria, which are later analyzed through SEM to assess their influence on stakeholder decision-making. The integration of these methods refines the hypotheses by verifying the strength and significance of relationships between variables.

The SEM method helps us validate hypotheses and gauge the significance of criteria based on how stakeholders make decisions, providing a broad perspective on their importance.

In a mixed-method approach, the importance attributed by each stakeholder is specifically identified, distinguishing between internal and external viewpoints. By integrating SEM rankings with the MCDM-AHP method, a comprehensive evaluation is achieved. This approach enables the prioritization of all criteria influencing decision-making across stakeholders while assessing the significance of each sub-criterion from both internal and external stakeholder perspectives.

2.9. Stakeholder-specific Results and Analysis

The results obtained from the SEM and MCDM-AHP methods provide valuable insights into the importance of different criteria and stakeholders in green decision-making within the banking sector.

As shown in Table 2.18, the findings provide a structured evaluation of sustainability criteria and stakeholder influence in green decision-making within the banking sector:

- Ranking of criteria. The application of SEM facilitated the ranking of all criteria based on collective decision-making by both internal and external stakeholders. This ranking offers a comprehensive overview of the significance of each criterion in shaping sustainable banking decisions.
- Stakeholder Influence: The mixed-method approach enabled a precise assessment of stakeholder importance, offering a detailed analysis of their role in sustainability-related decision-making.

Key insights from the mixed-method analysis:

- Criteria significance. The results highlight how different stakeholders perceive sustainability criteria, revealing variations in priority levels among employees, shareholders, and board members.
- Stakeholder decision-making impact: The analysis distinguishes between internal stakeholders (e.g., employees and board of directors) and external stakeholders (e.g., individual clients, SMEs, large corporations, and suppliers), assessing their relative influence on sustainability initiatives.

This structured approach enhances the understanding of how sustainability priorities vary across different stakeholder groups, ensuring that decision-making strategies align with both internal and external expectations.

The SEM and MCDM-AHP methods emphasize the pivotal role of internal stakeholders, particularly employees and the board of directors, in shaping green decision-making within the banking sector. Employees, identified as the most influential group, prioritize green products above all, followed by environmental management, highlighting their strong commitment to sustainability.

Table 2.18. Rank related to each stakeholder

Green decision-making by internal stakeholders	External stakeholders' green decision-making
C634 – A2: Employees (number 1)	C637 – A4: Individual clients (number 3)
C635 – A2: Shareholders: (number 4)	C638 – A5:: SME clients (number 5)
C636 – A3: Board of directors (number 2)	C639 – A6: Big corporate clients (number 6)
	C640 – A7: Suppliers (number 7)

While prioritizing green products, the board of directors further underscores the importance of strategic environmental initiatives. In contrast, external stakeholders, such as individual clients, while still necessary, have a comparatively smaller impact on the decision-making process.

These findings highlight that the success of sustainable management practices in banking heavily relies on the priorities set by internal stakeholders, particularly in promoting green products and environmental strategies. This research significantly advances the analysis of stakeholder influence in sustainable banking, demonstrating that internal stakeholders are vital drivers of green competitiveness in the sector.

The following table shows an expanded summary incorporating the importance of various green aspects (green products/services, green HR, environmental management, banking performance, etc.) to each stakeholder group.

The detailed results are in Table 2.19. provide comprehensive insights into the significance of various criteria and stakeholders in green decision-making within the banking sector. This analysis is instrumental in informing management practices to promote sustainability and enhance green competitiveness. These insights provide valuable guidance for banks aiming to design targeted sustainability strategies that reflect the values and influence of key internal actors.

Table 2.19. Importance of green aspects to various stakeholder groups

Stakeholder group	Rank (internal stakeholders)	Rank (external stakeholders)	Green products importance	Environmental management importance	Green HR Importance	Banking performance importance	Green platform management importance
Employees	1	-	Highest	Medium	High	Low	Low
Board of Directors	2	-	Highest	Medium	Low	Medium	Medium
Shareholders	4	-	High	Medium	Low	High	Low
Individual Clients	-	3	High	High	Medium	Medium	Low

End of Table 2.19

Stakeholder group	Rank (internal stakeholders)	Rank (external stakeholders)	Green products importance	Environmental management importance	Green HR Importance	Banking performance importance	Green platform management importance
SMEs clients	-	5	High	Medium	Low	Low	Low
Big corporates clients	-	6	High	Medium	Low	Low	Low
Suppliers	-	7	Low	Medium	Low	Low	High

Employees, the most influential internal stakeholders, prioritize green products. Following green products, environmental management and green HR are also considered necessary. Banking performance and green platform management are less critical for this group.

The board of directors, ranking second in influence, prioritizes green products. Environmental management is closely followed, with banking performance holding moderate importance. Green HR and green platform management are deemed less significant.

Shareholders place high importance on green products, with a moderate emphasis on environmental management. Banking performance is significantly valued, whereas green HR and green platform management are less critical.

As the top external stakeholders and ranking third overall, individual clients consider environmental management equally crucial as green products. Green HR and banking performance hold moderate importance, while green platform management is less critical. Small and medium-sized enterprise (SME) clients rank green products highest, followed by environmental management. Green HR and banking performance are less crucial, and green platform management holds the lowest importance. Similar to SMEs, big corporate clients prioritize green products and environmental management. Green HR and banking performance are less important, and green platform management is the least important.

Suppliers place relatively less importance on green products, green HR, and banking performance. Environmental management is more important to them, with green platform management being the highest among all criteria.

These findings underscore the significant role of internal stakeholders in green decision-making within the banking sector, with external stakeholders also

contributing notably, particularly individual clients. Green products emerged as a key priority for most stakeholders, underscoring their critical importance in sustainable banking practices. By integrating AHP-MCDM and SEM methods, the research enhances rigour and comprehensiveness, providing a robust framework for analyzing the relationships between criteria and stakeholder perceptions. This combined approach effectively identifies critical factors for improving green competitiveness in banking, significantly advancing sustainable management practices within the sector.

The selected methodology combines structural equation modeling (SEM) and analytic hierarchy process (AHP) within a multi-criteria decision-making (MCDM) framework to enhance the robustness of the research design. This dual-method approach is purposefully aligned with the research objectives, allowing a comprehensive analysis of how sustainable management practices influence stakeholder decisions and green competitiveness within the banking sector. SEM is applied to validate hypotheses and examine relationships between green management practices. At the same time, AHP-MCDM facilitates the prioritization of sustainable practices, addressing an essential gap in the literature on how these factors are weighted across stakeholder groups (Maury, 2018). By integrating quantitative methods, this methodology supports empirical rigour, ensuring that each criterion's influence is accurately represented. Additionally, the methodology was designed with scalability for emerging markets, providing banks with actionable insights that align with global sustainability standards (Xu et al., 2024).

The analysis extends beyond statistical results to contextualize findings within existing literature, highlighting consistencies and distinctions with previous studies. For instance, while green HR and environmental management have strongly influenced developed markets, this research underscores their specific relevance in emerging economies, particularly in Lebanon, where sustainable practices also play a crucial role in regulatory compliance and stakeholder trust. Findings from SEM indicate that green financial management (GFM) and green HR management (GHR) contribute substantially to green competitiveness, paralleling insights from Kumar and Prakash (2020) but emphasizing a nuanced importance within the banking context. This layered analysis demonstrates that sustainable practices benefit competitiveness and meet diverse stakeholder expectations across regions and economic conditions.

The results reflect how different stakeholders within the banking sector prioritize various aspects of green management, highlighting green products as consistently significant across internal and external stakeholders. Environmental management also emerges as crucial, while green HR and banking performance show varying degrees of importance depending on the stakeholder group.

Based on the findings from the stakeholder prioritization of green management factors within the banking sector, it is evident that green products and environmental management consistently hold significant importance across various stakeholder groups.

These results align with the accepted hypotheses from our structural equation modeling (SEM) analysis, which confirmed the positive influences of green products and environmental management on stakeholder decision-making processes. While green HR, banking performance, and green platform management did not show statistically significant influences across all stakeholder groups, their rankings provide valuable insights for managerial decision-making. For instance, analyzing the fact that employees value green HR alongside green products suggests a holistic approach to employee satisfaction and engagement in sustainability initiatives. Similarly, the varying importance placed by shareholders on banking performance underscores the balance required between banking outcomes and environmental responsibilities.

These non-significant results can still inform managerial strategies by highlighting areas where stakeholders may have differing priorities or where potential improvements in communication and engagement could enhance overall sustainability efforts. For example, focusing on enhancing green platform management practices could align supplier expectations more closely with environmental goals despite their lower overall importance compared to other factors.

While green products and environmental management stand out as critical priorities based on the SEM findings, the insights from less significant factors such as green HR, banking performance, and green platform management provide supplementary context that supports more nuanced and informed decision-making within the banking sector's sustainability initiatives. One limitation of this research is its reliance on the AHP method to report some data, which may introduce bias. However, the model is designed for wider applicability, drawing on universal management theories such as stakeholder theory, resource-based view (RBV), and sustainable management practices. Its integration of statistical methods like SEM and MCDM-AHP enhances replicability across different contexts, supporting broader relevance beyond Lebanon. The research incorporates multiple data sources and triangulation to address these limitations and to strengthen the validity of the results.

2.10. Conclusion of the Second Chapter

At the outset of this chapter, this dissertation established the foundational framework by delineating the criteria used, formulating key hypotheses, and presenting the developed research model. These elements were carefully crafted based on

theoretical insights and empirical needs to address the gaps in sustainable management practices within the banking sector. Integrating these criteria and hypotheses into the research model structured the investigation and ensured a robust approach to analyzing stakeholder priorities and green decision-making processes. This systematic approach underpins the comprehensive results discussed in this chapter.

The next chapter builds upon the theoretical framework discussed and applies these concepts to empirical data, validating the proposed model for sustainable banking.

1. The results obtained from the SEM and MCDM-AHP methods offer a profound and detailed analysis of green decision-making processes within the banking sector, providing clear and precise answers to crucial questions. This analysis reveals that internal stakeholders, particularly employees and the board of directors, are the main drivers behind sustainability initiatives. Their influence is paramount in shaping the bank's green agenda and directing its sustainability efforts. However, external stakeholders, such as individual clients, also play a significant role, although their impact is somewhat less dominant than internal stakeholders.
2. The findings from this research highlight distinct and varied preferences among different stakeholder groups regarding green criteria. Employees and board members prioritize green products, environmental management, and green human resources management, viewing these areas as essential to the bank's sustainability strategy. In contrast, they regard green platforms and banking management as less critical. Individual clients, however, place equal emphasis on environmental management and green products while also considering green HR and banking performance moderately important. Shareholders, focusing on banking returns, emphasize green products, environmental management, and banking performance as crucial factors. Similarly, SMEs and big corporate clients strongly prefer green products and environmental management, recognizing their importance in maintaining sustainable business practices. On the other hand, suppliers prioritize banking management and green platform initiatives, which are more closely aligned with their business operations and interests. The mixed-method approach employed in this research, integrating SEM and MCDM-AHP, proves to be a powerful tool for quantitatively assessing the importance and preferences of each stakeholder group. This dual methodology validates the significance of the identified green criteria and sheds light on the complex and nuanced relationships between different stakeholders. These insights are crucial for developing informed management practices that promote sustainability and enhance the bank's green competitiveness.

3. By identifying the most critical factors and gaining a deep understanding of stakeholder dynamics, banks can create customized sustainability strategies that align with the priorities and expectations of their most influential stakeholders. This comprehensive analysis bridges the gap between theoretical knowledge and practical application and significantly advances sustainable management practices within the banking sector. Such advancements ensure that banks are not only meeting current sustainability demands but are also well-positioned to adapt to future challenges and opportunities in the evolving landscape of green finance.
4. Moreover, these findings can serve as a benchmark for other banking institutions looking to enhance their green decision-making processes. By leveraging the insights gained from this mixed-method approach, banks can refine their sustainability strategies, making them more effective and aligned with stakeholder expectations. This, in turn, can lead to greater stakeholder satisfaction, improved reputation, and a more robust market competitive position. The emphasis on green products and environmental management, in particular, highlights the growing importance of sustainability in the banking sector and the need for banks to integrate these elements into their core business operations.
5. The findings of the Second Chapter reveal that the green management criteria studied, particularly green product and environmental management, are integral to enhancing sustainable decision-making among stakeholders. These insights provide a comprehensive understanding of stakeholder priorities and underscore a significant gap in existing methods that this research fills by combining SEM with AHP-MCDM. Such a framework ensures that banks can design sustainability strategies closely aligned with stakeholder expectations, positioning them to meet market demands and regulatory standards in an increasingly eco-conscious banking landscape.
6. The Second Chapter confirms that sustainable management criteria, particularly green product and environmental management, are central to driving stakeholder engagement and enhancing green competitiveness in banking. The integration of SEM and AHP-MCDM provides a nuanced interpretation of each criterion's importance, aligning with the research's objectives to present a model adaptable for both developed and emerging markets.

These insights reinforced the need for banks to embed sustainability within core operations, thereby addressing a significant research gap and providing actionable strategies that align with stakeholder expectations across varied regulatory landscapes.

3

Model for Measuring Sustainable Management in Banking Firms

The previous chapter examined the significant influence of green management practices on decision-making within the banking sector, emphasizing the critical role of sustainability in shaping strategic initiatives. Building upon these insights, the Third Chapter focuses on developing, validating, and applying a comprehensive model for measuring sustainable management in banking institutions.

This chapter's primary objective is to establish a robust measurement model tailored to assess sustainable management practices in banking firms. Utilizing methods such as structural equation modeling (SEM) and multi-criteria decision-making (MCDM) through the analytic hierarchy process (AHP), the framework quantifies the impact of various green management practices on decision-making processes.

Following the model's development, its effectiveness and applicability within the banking industry are validated through empirical assessment and case studies. This validation process demonstrates how the model captures and evaluates the tangible outcomes of green product management, platform management, human resources management, environmental management, and overall green management within banking institutions.

The chapter concludes with an analysis of critical insights derived from the model's findings, examining the implications of sustainable management practices on stakeholder decision-making, market expansion, and green competitiveness. A structured, evidence-based contribution is made to sustainable management in the banking sector by integrating theoretical insights with empirical findings. Measurable green management practices are identified and validated through rigorous analysis, providing a foundation for enhancing sustainability strategies. Practical recommendations are developed to improve operational efficiency and guide banks in aligning environmental objectives with their core activities. A systematic approach supports the evaluation, implementation, and continuous refinement of sustainability efforts, enabling informed decision-making and fostering long-term competitiveness across the sector. On the topic of this chapter, one publication was published by the author (Nassar & Tvaronavičienė, 2023).

3.1. Green Decision-making Prioritization Tool for Banks

Banks should adopt a comprehensive model focusing on two critical components, green product management (GP) and environmental management (EMG), to effectively integrate sustainable management practices and enhance green competitiveness in the banking sector. Green product management emphasizes developing and promoting eco-friendly banking products and services, aligning the bank's offerings with its sustainability goals. This approach is essential for internal stakeholders, such as employees and the board of directors, as it fosters internal commitment to green initiatives and reinforces the bank's dedication to sustainability.

Environmental management, by contrast, involves implementing strategies to minimize the bank's environmental footprint through initiatives like waste management, energy efficiency, and other sustainability-focused practices. This aspect is essential for ensuring regulatory compliance and enhancing the bank's reputation among internal and external stakeholders. Practical environmental management underscores the bank's commitment to sustainability and strengthens its public image and market position.

Adopting this stakeholder-centric green management model allows banks to strategically improve their sustainability performance and solidify their competitive edge in an increasingly eco-conscious market. The model emphasizes integrating green product management and environmental management throughout all organizational levels, ensuring that internal and external stakeholders align with and support the bank's sustainability efforts.

A structured, sustainable management plan for green banking is crucial to implement this model effectively. This plan should begin with establishing a sustainability committee that oversees and drives the bank's sustainability initiatives. Strong support from senior management is vital to ensure that sustainability goals are prioritized and adequately resourced.

A comprehensive sustainability assessment is essential for evaluating current practices, identifying environmental impacts, and uncovering areas for improvement. Based on this assessment, the bank should set SMART goals for green product management and environmental management. Stakeholder analysis and priority mapping are essential to identify key stakeholders, such as employees, board members, shareholders, clients, and suppliers, and prioritize the most relevant green aspects for these groups to maximize the impact of green initiatives. Integrating sustainable management into the bank's operations involves developing and promoting green banking products, such as green mortgages and sustainability-linked loans, and implementing operational efficiency measures like energy-saving initiatives and paperless banking. Customer engagement is also vital, with the bank actively promoting green banking options and conducting awareness campaigns to encourage customer participation in sustainability efforts. Partnerships and collaboration play a supportive role in these green management practices. By collaborating with suppliers and engaging in community-based green activities, the bank can achieve mutual sustainability goals and enhance local environmental sustainability.

Monitoring and reporting are crucial for tracking progress toward sustainability goals. The bank should establish KPIs and produce regular green annual reports to ensure transparency and accountability. Continuous improvement, driven by feedback, regulatory adaptation, and ongoing employee training, is vital for sustaining green management efforts. Seeking recognition and awards can enhance the bank's reputation in sustainable finance. Regular reviews of the sustainability management plan allow for adjustments, such as launching targeted campaigns for green banking products, integrating green competitiveness into core operations, and supporting long-term sustainability.

This comprehensive approach ensures that sustainability is embedded into the bank's core operations and positions the bank as a leader in green finance. By consistently aligning its practices with stakeholder expectations and market demands, the bank can enhance its competitive advantage while fostering a culture of innovation and responsibility. Ultimately, this model equips banks to navigate the challenges of an eco-conscious market, ensuring long-term resilience and growth in a sustainable future.

Banks can effectively integrate sustainability into their operations by utilizing a structured prioritization approach based on the green decision-making pri-

oritization tool. The rankings of green product management (GPM) and environmental management (EMG) criteria, along with the stakeholder importance rankings, provide a data-driven method for banks to allocate resources strategically, ensure stakeholder alignment, and maximize green competitiveness.

- Using the ranking of criteria for strategic implementation

The ranking of criteria provides a systematic approach for banks to prioritize sustainability initiatives based on impact and feasibility. The rankings indicate which green products (e.g., sustainability-linked loans and green mortgages) and environmental management practices (e.g., energy-saving initiatives and paperless banking) hold the highest strategic value. Banks can use this ranking to:

- Optimize resource allocation, e.g., prioritize financial and operational investments in sustainability programs with the highest impact.
- Enhance stakeholder engagement, e.g., align green banking initiatives with employees, customers, shareholders, and regulatory expectations.
- Strengthen green competitiveness, e.g., focus on high-value sustainability strategies to improve reputation, regulatory compliance, and long-term financial performance.

For instance, the top-ranked green product management (GPM) criteria indicate that banks should first emphasize low-charge insurance premiums for eco-friendly actions (Rank 1) and green mortgages (Rank 2) before allocating resources to other initiatives like sustainability-linked loans (Rank 6). Similarly, for environmental management (EMG), energy-saving measures (Rank 1) and people's green awareness programs (Rank 2) should take priority over initiatives such as green annual reports (Rank 8) or collaborations with external sectors (Rank 9).

- Stakeholder-centric implementation strategy

A successful sustainability strategy requires aligning green initiatives with stakeholder priorities. The stakeholder ranking highlights which groups place the highest importance on green product management and environmental management. Banks should tailor sustainability initiatives to reflect the expectations and engagement levels of each key stakeholder group.

- Employees (ranked 1st in importance)
- GPM priority: very high
- EMG priority: high

- Implementation strategy:

Launch internal awareness campaigns on sustainability practices, incentivizing employees to participate in energy-saving measures and paperless banking. Develop employee sustainability training programs to foster a culture of green banking.

Introduce internal green reward systems, such as offering additional incentives for employees who use sustainable transport, reduce office energy consumption, or participate in green community initiatives.

- B. Shareholders (ranked 4th in importance)
- GPM priority: very high
- EMG priority: high
- Implementation strategy:

Develop transparent sustainability reporting frameworks, including green annual reports and ESG disclosures, to ensure alignment with shareholder expectations.

Expand investment in sustainability-linked financial products, such as green bonds or renewable energy financing options.

Highlight sustainability-linked profitability indicators, demonstrating the long-term financial viability of green banking strategies.

- C. Board of directors (ranked 2nd in importance).
- GPM priority: very high.
- EMG priority: moderate.
- Implementation strategy:

Ensure sustainability is embedded into corporate governance, with clear oversight mechanisms such as a sustainability committee.

Set long-term green banking KPIs, aligning strategic business objectives with environmental responsibility.

Incorporate sustainability metrics in executive compensation, rewarding leadership for meeting sustainability goals.

- D. Individual clients (ranked 3rd in importance).
- GPM priority: moderate.
- EMG priority: very high.
- Implementation strategy:

Expand customer access to green banking products, including green mortgages, sustainability-linked loans, and eco-friendly credit cards.

Launch targeted paperless banking campaigns, offering incentives for customers to opt into digital transactions.

Promote eco-conscious financial literacy programs, educating clients on sustainable investment and ethical financing options.

- E. SMEs & big corporates (ranked 5th & 6th in importance).
- GPM priority: very high.
- EMG priority: high.
- Implementation strategy:

Offer sustainability-linked corporate loans, rewarding businesses for adopting eco-friendly practices such as carbon-neutral operations or renewable energy integration.

Introduce corporate sustainability certification programs, helping businesses meet environmental standards while improving green credibility.

Develop customized corporate banking solutions, such as green treasury management services or sustainability consulting for SMEs.

- F. Suppliers (ranked 7th in importance).
- GPM priority: low.
- EMG priority: moderate.

- Implementation strategy:

Implement green supply chain policies, requiring suppliers to adhere to sustainability standards.

Promote collaboration on waste reduction and renewable energy initiatives, ensuring banks work with suppliers committed to minimizing environmental impact.

- Actionable roadmap for implementation.

To practically apply these insights, banks can follow this step-by-step framework:

1. Stakeholder consultation, e.g., gathering data on sustainability priorities from employees, shareholders, customers, board members, and business clients.
2. Ranking-based resource allocation, e.g., focus financial and operational efforts on the highest-ranked green banking products and environmental initiatives.
3. Policy integration, e.g., embedding sustainability into corporate governance, performance metrics, and strategic decision-making.
4. Operational execution, e.g., the launch of internal programs (employee incentives, paperless banking), customer-facing initiatives (green mortgages, eco-loans), and corporate sustainability financing solutions.
5. Monitoring and reporting, e.g., establishing key performance indicators (KPIs) to track green banking adoption rates, energy savings, and sustainability-linked financial performance.
6. Regulatory and market adaptation, e.g., regularly reviewing sustainability strategies, and ensuring compliance with evolving regulatory frameworks and global sustainability benchmarks.

Banks can implement a strategic, data-driven approach to green banking by leveraging the ranking of sustainability criteria and stakeholder priority mapping. This framework enables financial institutions to maximize sustainability impact,

align initiatives with stakeholder expectations, and enhance green competitiveness in the financial sector.

Banks can embed sustainability into their core operations to simultaneously drive financial performance and environmental responsibility, ensuring long-term resilience in an increasingly eco-conscious market.

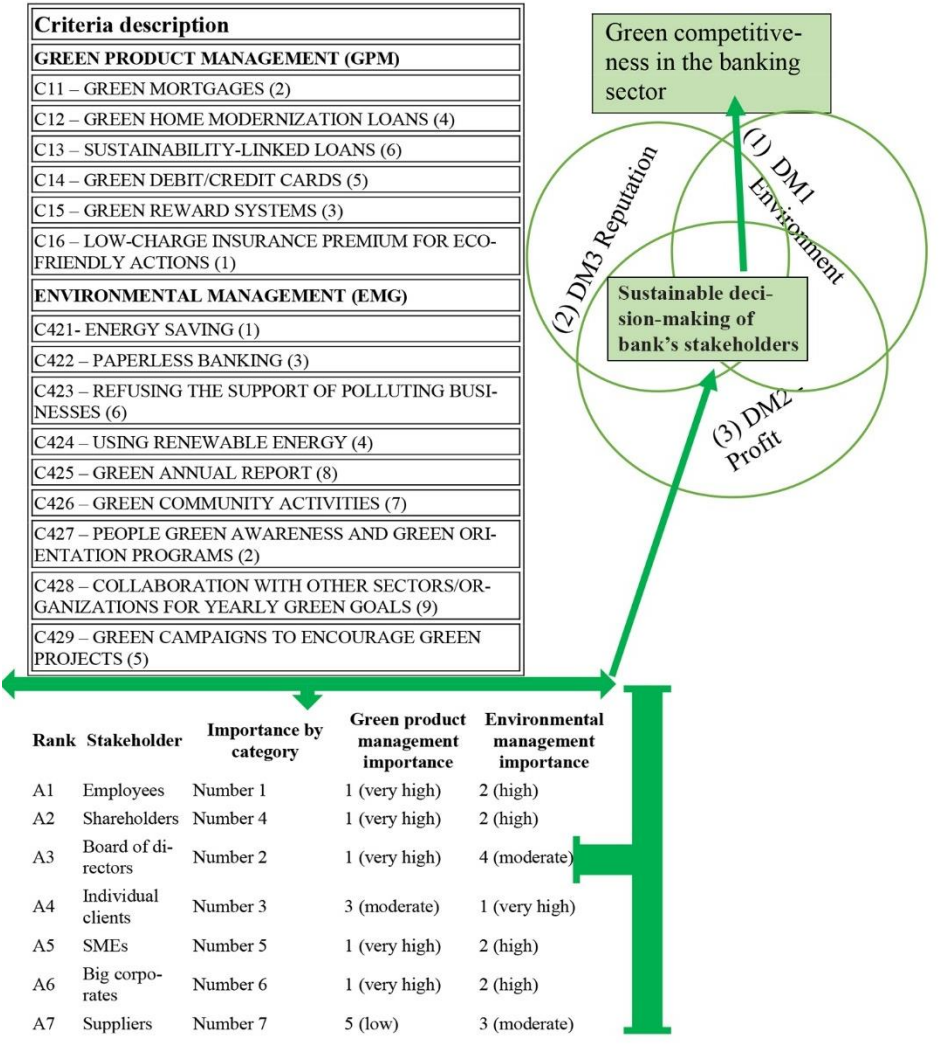


Fig. 3.1. Green decision-making prioritization tool for banks: an integrated approach based on approved hypotheses

The decision-making prioritization model presented in Figure 3.1 highlights green product and environmental management as two of the most impactful criteria for green competitiveness in banking. This model is constructed to align with stakeholder expectations across different levels of influence, ensuring banks integrate sustainable management practices efficiently and effectively. By prioritizing these criteria, banks can focus on high-impact areas that advance their green objectives and improve relationships with key stakeholders, thus fostering long-term competitive advantages. In developing the model for sustainable management in banking, certain practices, specifically green platform management, green human resources management, and green financial management, were evaluated and ultimately deemed less significant compared to green product management and environmental management, which had a more substantial impact on stakeholder engagement and green competitiveness. Green platform management, encompassing digital finance tools and online service platforms, primarily enhances operational efficiency but does not significantly influence stakeholder perceptions of sustainability. As these digital tools become more standardized across the industry, their role in differentiating green competitiveness diminishes, suggesting they contribute less to a bank's perceived sustainability impact than other practices. Similarly, green human resources management, which involves green-focused recruitment, training, and fostering environmental awareness among employees, plays a vital role in building a sustainable culture internally but has limited visibility outside the organization. This internal focus reduces its direct influence on external stakeholder decision-making, making it supportive rather than central to enhancing green competitiveness. Green financial management, including initiatives like green bonds and sustainable investment funds, also faces limitations, particularly in emerging markets where resource constraints and limited demand restrict the widespread adoption of green financial products. While it holds potential for future impact as markets evolve, its current influence on competitive positioning remains constrained. By prioritising green product management and environmental management in the model, the approach focuses on areas with immediate, visible impacts on green competitiveness and stakeholder expectations. These components were selected as core elements because they directly enhance a bank's sustainability reputation and regulatory compliance, aligning well with the expectations of both internal and external stakeholders. This focus allows the model to guide banks in leveraging sustainable practices that resonate most strongly, ensuring long-term competitiveness in a market increasingly attentive to green initiatives.

The Green Decision-making Prioritization Tool refines the existing hypothesis testing framework by systematically identifying and ranking sustainability strategies that have the most significant impact on green competitiveness. While the original framework assessed multiple factors influencing sustainable banking,

this tool enhances decision-making by prioritizing green product management (GPM) and environmental management (EMG) as the core elements of sustainability. It provides a structured methodology that enables banks to align their sustainability initiatives with stakeholder expectations, ensuring that green practices contribute to both regulatory compliance and competitive positioning. This tool plays a crucial role in guiding strategic decision-making by offering a structured evaluation process for banks to assess, prioritize, and integrate sustainability initiatives.

By ranking sustainability criteria based on their influence on stakeholders, regulatory demands, and market competitiveness, it facilitates data-driven decision-making regarding resource allocation and strategic focus. This stakeholder-centred approach ensures that the decision-making process reflects the priorities of both internal stakeholders (employees, board members, shareholders) and external stakeholders (clients, suppliers, regulators), maximizing the effectiveness of green initiatives.

The Green Decision-making Prioritization Tool encompasses all key stages of the decision-making process, ensuring that sustainability efforts are integrated into core banking operations. These stages include:

1. Strategic assessment and planning. Banks begin by evaluating their sustainability priorities based on stakeholder expectations, regulatory requirements, and market conditions. This stage includes establishing a sustainability committee to oversee and drive green initiatives.
2. Priority setting and resource allocation. Through a structured ranking system, the tool identifies sustainability practices with the highest impact. Banks allocate financial and operational resources to initiatives such as Green mortgages, renewable energy Use, and green community activities, ensuring that investments align with strategic sustainability goals.
3. Implementation of sustainability initiatives. Sustainability efforts are embedded across banking functions, including the development and promotion of green banking products, operational improvements such as energy efficiency and paperless banking, and ethical business practices such as refusing to support polluting industries. Additionally, stakeholder engagement efforts, including awareness campaigns, training, and collaborative sustainability projects, are implemented to enhance green integration.
4. Monitoring and continuous improvement. Banks establish key performance indicators (KPIs) to track progress and measure the effectiveness of sustainability initiatives. Regular sustainability reports ensure transparency and accountability, while feedback mechanisms allow for adaptive decision-making in response to evolving regulatory, environmental, and market conditions.

By structuring the decision-making process into these stages, the Green Decision-Making Prioritization Tool enables banks to implement high-impact sustainability strategies that not only fulfil regulatory requirements but also enhance long-term competitiveness. Through a proactive approach to sustainability, banks can reinforce their market position, foster innovation, and ensure resilience in an increasingly eco-conscious financial landscape.

The Green Decision-Making Prioritization Tool serves as an updated framework that refines the hypothesis testing model by prioritizing high-impact sustainability strategies. This tool provides a structured approach for banks to align their sustainability initiatives with stakeholder expectations while enhancing green competitiveness. By focusing on Green Product Management (GPM) and Environmental Management (EMG), the model ensures that sustainable practices are effectively integrated into the bank's core operations.

This decision-making framework encompasses all critical stages, beginning with strategic assessment and planning, where banks identify sustainability priorities based on stakeholder expectations.

The model recognizes Green Product Management and Environmental Management as the primary components of green competitiveness, ensuring that sustainability strategies align with regulatory requirements and market trends. Establishing a Sustainability Committee within the bank provides leadership oversight, ensuring that sustainability goals are systematically integrated into decision-making.

Following the initial assessment, the model facilitates priority setting and resource allocation by ranking sustainability practices based on their impact on green competitiveness. It ensures that financial and operational resources are allocated to initiatives with the most significant influence, such as Green Mortgages, Renewable Energy Use, and Green Community Activities. The structured ranking system enables banks to determine which green initiatives will yield the highest sustainability and market positioning returns.

The implementation phase focuses on embedding sustainability initiatives across various banking functions. Green banking products are developed and promoted to meet customer demands for eco-friendly financial solutions. At the same time, operational strategies such as energy-saving initiatives, paperless banking, and refusing to support polluting businesses are incorporated to minimize the bank's environmental footprint.

Additionally, stakeholder engagement efforts, including awareness programs and collaborative sustainability initiatives, ensure that internal and external stakeholders actively participate in the bank's green transition.

To measure and sustain the impact of these initiatives, the model integrates a monitoring and continuous improvement framework. Banks establish key performance indicators (KPIs) to track progress toward sustainability goals, ensuring

that green initiatives deliver measurable benefits. Regular sustainability reports enhance transparency, while ongoing stakeholder feedback mechanisms allow banks to refine their strategies in response to changing environmental and market conditions.

By integrating these structured decision-making processes, the Green Decision-making Prioritization Tool enables banks to develop targeted, high-impact sustainability initiatives that reinforce their competitive advantage. This model does not merely comply with environmental regulations but positions sustainability as a strategic asset, ensuring long-term resilience and growth in an increasingly eco-conscious financial landscape.

The green decision-making process in banks follows a structured approach to integrating sustainability considerations into strategic and operational decisions. This process begins with the identification of key sustainability priorities, which are determined based on stakeholder analysis and regulatory requirements. Following this, banks evaluate the feasibility and potential impact of various green initiatives through a structured prioritization framework. Resource allocation is crucial to ensuring that financial and human capital are directed toward high-impact sustainability initiatives, such as green mortgages, energy efficiency projects, and paperless banking. Implementation then follows, with banks developing and integrating sustainability programs into their existing operations, ensuring active engagement from internal and external stakeholders. Finally, continuous monitoring and performance evaluation allow banks to track the effectiveness of green initiatives using key performance indicators (KPIs), sustainability reports, and stakeholder feedback. This cyclical decision-making approach ensures that banks not only comply with sustainability regulations but also enhance their green competitiveness over time.

3.2. Sustainable Management Tool: Stakeholder Analysis and Priority Mapping

A stakeholder-centric approach to sustainable management enables banks to develop targeted management strategies by aligning sustainability initiatives with stakeholder priorities. The model integrates the stakeholder theory, highlighting the importance of meeting the expectations of regulators, customers, employees, and investors, while the resource-based view (RBV) and the dynamic capabilities theory demonstrate that sustainability can serve as a competitive asset when strategically aligned with stakeholder needs. Empirical findings validate that different stakeholders prioritize sustainability differently, with employees focusing on workplace sustainability and customers emphasizing eco-friendly banking services. The model quantifies stakeholder-driven sustainability trade-offs, showing

that banks can enhance both sustainability performance and competitive advantage by tailoring their strategies accordingly. In practice, banks can use this research model to develop green product offerings, responsible lending programs, and employee-driven sustainability initiatives. For banks in emerging markets facing regulatory and resource constraints, the model helps prioritize sustainability investments based on stakeholder influence and competitive impact. This comprehensive framework offers both theoretical and empirical validation, proving that stakeholder-driven sustainability strategies lead to more effective and competitive banking practices.

Sustainability trade-offs involve balancing competing sustainability goals, particularly when environmental, social, and economic priorities conflict. In banking and management, these trade-offs arise when the advancement of one sustainability dimension may negatively impact another, requiring careful decision-making to achieve an optimal balance. Here are some examples in banking:

- Profitability vs. environmental sustainability. A bank may invest in green finance initiatives (e.g., low-interest loans for renewable energy projects).
- However, these loans may generate lower short-term financial returns compared to traditional investments, leading to a trade-off between financial performance and environmental impact.
- Regulatory compliance vs. innovation. Strict sustainability regulations may require banks to implement costly compliance measures, such as carbon reporting or ESG audits.
- These costs could limit resources for innovation, such as developing new financial products or digital banking solutions.
- Stakeholder priorities vs. operational constraints. Customers may demand more green banking services, such as paperless banking or ethical investment funds. However, implementing these services could require significant infrastructure changes, increasing operational costs.

The dissertation addresses sustainability trade-offs by developing a model that quantifies how different stakeholders prioritize economic, social, and environmental factors in the banking sector. By incorporating multi-criteria decision-making methods such as SEM and MCDM-AHP, the model enables banks to evaluate sustainability initiatives that maximize benefits while minimizing negative impacts. This structured approach helps financial institutions balance financial performance with sustainability commitments, ensuring long-term competitiveness while aligning with stakeholder expectations. Understanding sustainability trade-offs prevents banks from making one-dimensional decisions and instead allows them to develop balanced, data-driven sustainability strategies that support long-term growth and regulatory alignment.

To effectively integrate sustainability in banking operations, it is crucial to identify key stakeholders, including employees, the board of directors, shareholders, individual clients, SME clients, big corporate clients, and suppliers. The identification process should be thorough, ensuring all relevant parties are considered. These stakeholders play a vital role in shaping the bank's sustainability agenda, and their preferences and priorities should be systematically collected and analyzed. This analysis will guide the prioritization of green aspects within the bank's operations.

The prioritization process should focus on two main areas: green products and environmental management. Green products, like mortgages and loans, refer to banking products promoting sustainability. Environmental management encompasses initiatives aimed at reducing the bank's environmental footprint. Banks can align their operations with stakeholder expectations and enhance their overall sustainability performance by focusing on these areas.

The structured application of the Green Decision-making Prioritization Tool follows a systematic procedure to ensure the effective integration of sustainability initiatives within banks. The first step is to conduct a stakeholder needs assessment, gathering insights from employees, customers, shareholders, and regulatory bodies regarding key sustainability concerns. Second, banks must define their green priorities using the AHP-MCDM ranking system, which quantifies the impact of various sustainability initiatives, such as green mortgages, energy efficiency projects, and ethical financing. Third, resource allocation and implementation strategies are developed, ensuring that financial and operational efforts align with the prioritized sustainability goals. The fourth step is active engagement with stakeholders, including promotional campaigns, educational programs, and incentives for customers who adopt green banking practices. Finally, banks must establish performance measurement frameworks, utilizing KPIs, green finance reporting metrics, and periodic audits to track progress and make necessary adjustments. This structured roadmap provides banks with a clear implementation pathway, ensuring sustainability integration at all operational levels.

The management plan for integrating sustainability is structured around these two components. The strategy involves developing and promoting green banking products for green product management. This requires a comprehensive approach that includes market research to understand customer needs and preferences, product development to create innovative banking solutions, and marketing to promote these products to the bank's clients. Action steps include implementing these products based on stakeholder preferences and educating customers on the benefits and availability of green banking products. This education can take various forms, such as informational brochures, online resources, and personalized consultations with bank representatives.

Environmental management focuses on reducing the bank's environmental footprint. The strategy includes investing in energy-saving initiatives, promoting paperless banking, and publishing annual environmental performance reports. Energy-saving initiatives may involve upgrading to more efficient lighting and heating systems, using renewable energy sources, and improving insulation in bank buildings. Promoting paperless banking can be achieved by encouraging digital statements, online banking, and electronic signatures, reducing the need for paper and physical storage. Publishing annual reports on the bank's environmental performance ensures transparency and accountability, allowing stakeholders to track progress and identify areas for improvement.

Implementation and monitoring are critical to the success of the management plan. A detailed timeline should be established for each action step, ensuring that initiatives are completed promptly. Performance metrics must be defined to measure the success of each initiative. These metrics can include reductions in energy consumption, decreases in paper usage, and increases in the adoption of green products. Regular monitoring and reporting on these metrics will help to keep the plan on track and identify any issues that need to be addressed.

Review and adaptation are also essential components of the management plan. Regular reviews should be conducted to monitor progress and ensure alignment with the set goals. These reviews can be scheduled quarterly or biannually, depending on the complexity of the initiatives. Continuous improvement should be sought by refining strategies based on feedback and emerging best practices. This may involve adjusting timelines, reallocating resources, or revising performance metrics to better reflect the bank's sustainability goals.

Banks can effectively integrate sustainability across their operations by adhering to this structured management plan. This integration not only enhances the bank's sustainability performance but also contributes to achieving green competitiveness. Green competitiveness refers to the bank's ability to attract and retain customers who prioritize sustainability, thereby gaining a competitive edge in the market. Moreover, by contributing positively to environmental sustainability, banks can build a more substantial reputation and foster trust among their stakeholders.

In conclusion, integrating sustainability in banking operations requires a comprehensive and systematic approach. By identifying key stakeholders, prioritizing green aspects, and implementing a structured management plan, banks can enhance their sustainability performance and contribute positively to environmental sustainability. This approach benefits the environment and positions banks as leaders in sustainability, attracting customers and investors who value green practices. Regular reviews and continuous improvement ensure the bank remains on track to achieve its sustainability goals, driving long-term success and competitiveness in the banking sector.

Table 3.1 synthesizes the key components of the management plan into a structured tool that banks can use to integrate sustainability across their operations effectively. It aligns with the outlined strategies: stakeholder analysis, goal setting, operational integration, stakeholder engagement, partnerships, monitoring, continuous improvement, training, and recognition. By following this approach, banks can enhance their sustainability performance, competitive advantage, and commitment to environmental sustainability.

Table 3.1. Management tool: stakeholder-centric green management strategy

Objective	Details
Stakeholder analysis and priority mapping	Identify key stakeholders: list employees, board of directors, shareholders, individual clients, SME clients, big corporates, and suppliers. Prioritization of green aspects: focus on green products and environmental management based on stakeholder rankings.
Management plan components	A. Green product management. Strategy: develop and promote green banking products (e.g., green mortgages, sustainability-linked loans). Action steps: implement products based on stakeholder preferences and educate customers. B. Environmental management. Strategy: reduce the bank's environmental footprint. Action steps: invest in energy-saving initiatives, promote paperless banking, and publish annual reports.
Implementation and monitoring	Timeline: set timelines for each action step. Performance metrics: define metrics to measure success.
Review and adaptation	Regular reviews: conduct periodic progress reviews. Continuous improvement: refine strategies based on feedback.

Moreover, this section introduces a stakeholder-centric approach to sustainable management, emphasizing the importance of aligning sustainability initiatives with the expectations of key stakeholders. By integrating the stakeholder theory, the resource-based view (RBV), and the dynamic capabilities theory, the model positions sustainability not only as a regulatory requirement but also as a strategic asset that enhances competitiveness. The model recognizes that different stakeholders, such as employees, board members, shareholders, individual clients, SMEs, big corporate clients, and suppliers, have varying priorities when it comes to sustainability. Understanding these preferences enables banks to develop targeted strategies that maximize impact while balancing economic, social, and environmental considerations.

The sustainable management tool focuses on two primary areas: green product management and environmental management. Green product management involves developing and promoting eco-friendly banking solutions, such as green mortgages, sustainability-linked loans, and digital banking incentives, that encourage sustainable consumer behavior. Environmental management focuses on minimizing the bank's ecological footprint through initiatives like energy efficiency programs, paperless banking, responsible lending policies, and community-based green initiatives. By prioritizing these areas, banks can ensure that their sustainability efforts align with both internal objectives and external market expectations.

A structured management plan is necessary to integrate these sustainability measures into banking operations effectively. This begins with identifying key stakeholders and assessing their sustainability priorities. Based on this assessment, banks can strategically allocate resources to initiatives with the most significant impact. Promoting green financial products and embedding sustainability into lending practices ensures that customers are incentivized to adopt environmentally responsible behavior. Simultaneously, operational improvements, such as reducing paper consumption, increasing energy efficiency, and adopting renewable energy sources, enhance the institution's environmental performance.

To sustain the effectiveness of these efforts, banks must implement robust monitoring and evaluation mechanisms. Establishing key performance indicators (KPIs) and publishing annual sustainability reports enhance transparency and accountability. Regular assessments help banks refine their strategies, ensuring they remain responsive to evolving environmental regulations and stakeholder demands. Seeking industry certifications and sustainability awards further strengthens their position as responsible financial institutions.

The decision-making prioritization tool serves as a practical framework rather than a theoretical model. It provides a structured yet flexible guide for banks to integrate sustainability into daily operations, ensuring that environmental responsibility becomes an inherent part of strategic decision-making. The example of implementing green products and environmental management within a banking institution serves as a practical reference, illustrating how sustainability measures can be embedded across various functions. Banks can adopt this approach to enhance their competitive edge, improve stakeholder relationships, and reinforce their long-term resilience in an increasingly eco-conscious financial market.

This section presents a flexible guidance framework designed to support banks in embedding sustainability within their operational practices. It offers a structured yet adaptable approach to prioritizing green initiatives in alignment with stakeholder expectations, regulatory obligations, and overarching business objectives. Rather than imposing a rigid set of procedures, it provides actionable insights for the implementation and ongoing monitoring of green products and

environmental management strategies. The framework showcases real-world applications and serves as a practical tool that banks can customize to enhance their sustainability performance while preserving their competitive edge.

Sustainability has become an essential component of modern banking operations, with financial institutions increasingly recognizing the need to incorporate green principles into their strategic planning. This framework outlines how banks can embed sustainability into their operations by aligning their initiatives with the specific interests of stakeholders such as employees, shareholders, board members, individual clients, SMEs, big corporate clients, and suppliers.

Employees, for instance, play a central role in fostering a culture of sustainability. Banks can raise internal awareness through educational campaigns, training sessions, and incentives for environmentally conscious behavior. These initiatives not only support green objectives but also encourage staff engagement and alignment with institutional goals.

For board members, the focus should be on strategic oversight. This may involve allocating budgets for green product development and establishing reporting structures to monitor the progress of environmental initiatives. Quarterly updates on key performance indicators can help ensure transparency and informed decision-making.

Shareholders, especially external, are increasingly attentive to environmental performance. Transparent and detailed sustainability reports, highlighting metrics such as emissions reduction and green investments, can help reassure them of the bank's commitment to responsible practices.

Clients also present distinct sustainability expectations. Individual customers may respond positively to paperless banking incentives or sustainability-linked financial products like green mortgages. For SMEs, tailored loans and consulting services can support their transition to greener operations. Meanwhile, big corporate clients may seek partnerships for renewable energy projects or require customized green financing solutions aligned with their broader sustainability strategies.

Even suppliers play a part in the bank's environmental impact. Collaborating with them on sustainable supply chain practices, such as reducing packaging waste or optimizing logistics, can extend the bank's commitment to sustainability beyond its immediate operations.

A bank enhances its sustainability profile and strengthens trust and collaboration across its ecosystem by aligning its strategies with the environmental priorities of each stakeholder group.

This holistic approach positions the institution as a proactive, responsible actor in the financial sector, capable of achieving long-term competitive advantage through environmental leadership.

3.3. Roadmap for Banks to Follow in Implementing Sustainability Criteria Evaluation Using Statistical Methods and Formulas

Mapping the dissertation results reveals several key insights. The application of the SEM method provided a comprehensive evaluation of each criterion's significance in influencing green decision-making within the banking sector. Additionally, it facilitated hypothesis testing and the examination of relationships between sustainability criteria.

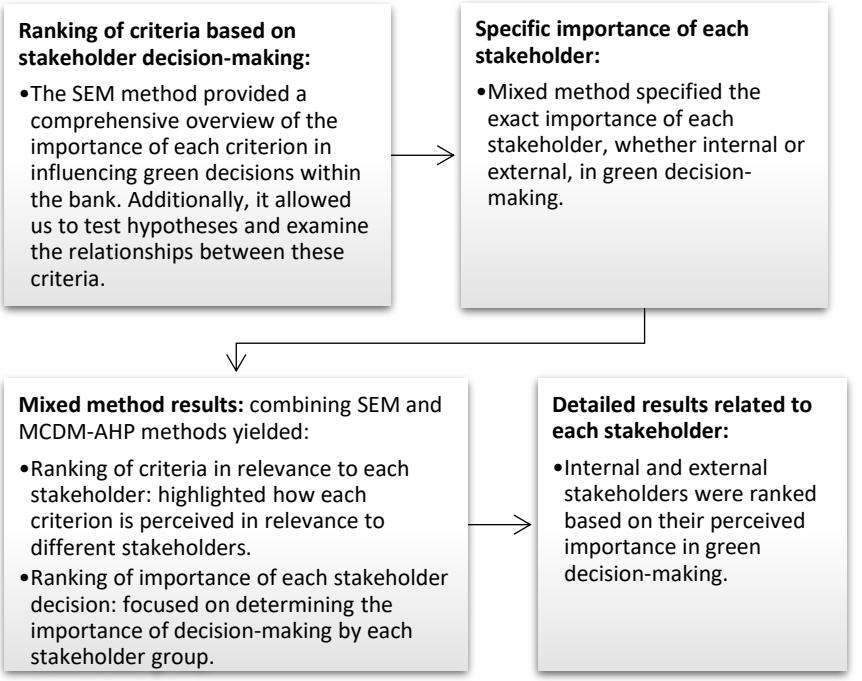


Fig 3.2. Mapping the dissertation statistical methods

As shown in Figure 3.2, employing a mixed-method approach enabled a precise assessment of the importance attributed to green decision-making by both internal and external stakeholders. The integration of SEM and MCDM-AHP methods generated detailed insights. Overall, these results offer valuable insights into how different criteria and stakeholder groups influence green decision-making in the banking sector. Internal stakeholders, especially employees and the

board of directors play a crucial role in driving sustainability within the organization. Meanwhile, external stakeholders, such as individual clients, also exert significant influence by shaping demand for environmentally responsible practices. This highlights the need for banks to engage both internal and external actors to successfully implement green strategies, to establish how each criterion is perceived by different stakeholder groups, and to determine the relative influence of each group in shaping sustainability decisions within banking institutions.

Internal stakeholders, such as employees and the board of directors, were ranked based on their perceived importance in green decision-making. This integrative approach comprehensively evaluated the dynamics between stakeholders and green criteria, providing actionable insights for aligning sustainability goals with practical banking operations.

This integrative approach revealed the interconnectedness of green criteria, emphasizing how stakeholder priorities shape decision-making. By quantifying the importance of each criterion, the methods provided clarity on aligning green initiatives with internal and external expectations. These insights offer a practical roadmap for effectively embedding sustainability into banking operations. In contrast, external stakeholders, including individual clients, SMEs, big corporates, and suppliers, were also ranked according to their influence on the bank's green decisions.

Overall, these results provide valuable insights into how different criteria and stakeholders contribute to green decision-making within the banking sector. Internal stakeholders, particularly employees and the board of directors play a significant role, while external stakeholders, like individual clients, also have substantial influence.

Green products emerged as crucial across internal and external stakeholders, underscoring their importance in green decision-making. Table 3.2 outlines the step-by-step process for applying the proposed model, ensuring that the bank's sustainability efforts are measurable and aligned with best practices in green management.

The methodology will focus on how to incorporate stakeholder analysis, green product management, and other critical factors into a cohesive framework that can be used to assess and enhance sustainable management practices within the banking sector.

An explanatory model is proposed to support banks in the effective integration of green management practices, combining both qualitative prioritization and quantitative validation techniques. The process begins with the analytic hierarchy process (AHP) to establish a structured decision-making framework. Banks first define a hierarchy of sustainability criteria, such as green products, green platform management, green HR practices, environmental management, and green finan-

cial management. Through pair-wise comparisons, AHP enables the determination of the relative importance of each criterion. The results are then normalized to generate weighted priorities, offering a clear roadmap for aligning sustainability efforts with strategic objectives.

Table 3.2. Model for banks to integrate green management practices

Step	Method/Tool used	Description
1. Analytic hierarchy process (AHP)	Establish a hierarchy of sustainability criteria and conduct pairwise comparisons.	Calculate weights to prioritize criteria based on importance in sustainability goals.
2. Structural equation modeling (SEM)	Model relationships between criteria to understand their impact on green competitiveness.	To validate model adequacy, evaluate model fit using chi-square, RMSEA, CFI, TLI, and IFI indices.
3. Cronbach's alpha	Test the internal consistency of data collected for reliability across sustainability criteria.	Ensure the reliability of the measurement items used in the evaluation.
4. Standardized regression coefficients	Quantify the strength and direction of relationships between criteria using SEM outputs.	Assess the significance and impact of various sustainability criteria on green competitiveness.
5. Standard error	Measure precision of estimates derived from SEM to understand variability in estimated parameters.	Provide insights into the reliability and variability associated with the estimated parameters.
6. Continuous improvement	Iterate based on findings to refine the evaluation framework and align with sector dynamics.	Continuously refine the sustainability evaluation framework to align with evolving sector dynamics.

The model incorporates structural equation modeling (SEM) to deepen the analysis and allow for the exploration of complex interrelationships among the sustainability criteria and their collective influence on green competitiveness.

SEM provides valuable insights into the causal pathways and interaction effects, while model validation is ensured through statistical fit indices such as chi-square, RMSEA, CFI, TLI, and IFI. The reliability of the data is then verified using Cronbach's alpha, ensuring internal consistency across the measurement items for each sustainability component. Furthermore, the model leverages stand-

ardized regression coefficients to quantify the strength and direction of relationships between variables, identifying which sustainability factors exert the greatest influence on outcomes.

Standard error calculations are applied to assess the precision of these estimates, offering clarity on the stability and reliability of the results.

The model encourages an iterative refinement approach. Banks can continuously enhance their sustainability strategies in response to evolving market conditions and stakeholder expectations by revisiting and adjusting the framework based on findings from AHP, SEM, and associated statistical analyses.

Banks can effectively evaluate and prioritize sustainability criteria by following this roadmap using rigorous quantitative methods. This approach enhances decision-making processes and fosters sustainable practices that contribute to long-term competitiveness and resilience in the banking sector.

Green management practices significantly influence decision-making within the banking industry.

The research highlights that prioritizing eco-friendly products and effective environmental management strategies can enhance decision-making processes and green competitiveness.

The proposed model for measuring sustainable management in banking firms, developed through conceptual frameworks, Hypotheses formulation, and integration of SEM and MCDM-AHP methods, offers a robust approach to assessing and improving sustainability practices. Validation through rigorous statistical analysis ensures reliability and practical applicability. The implications include enhanced decision-making, strategic alignment with sustainability goals, and increased stakeholder engagement, ultimately contributing to banks' long-term sustainability and competitiveness.

The findings of the dissertation resonate with those of Bilan et al. (2019) and Chaudhuri et al. (2022), highlighting that sustainable management practices, specifically green product management and environmental management, are pivotal in enhancing a bank's reputation and green competitiveness. Lebanese banks can achieve environmental objectives and market competitiveness by focusing on stakeholder-centric strategies and developing green banking products.

However, this research's findings emphasize a unique context: the Lebanese banking sector must overcome additional barriers due to resource constraints and a developing regulatory framework. These findings underscore the importance of a regionally tailored approach to sustainable management, providing Lebanese banks with actionable steps aligning with global best practices and local stakeholder priorities.

The dissertation's model, therefore, fills a significant research gap by offering a roadmap for implementing sustainable practices that cater to the needs and

expectations of Lebanese stakeholders, ensuring relevance and applicability within the local context.

3.4. Research Findings that Contribute to Management Theories and Lead to the Creation of a Green Decision-making Prioritization Tool for Banks

Research on sustainable management in the banking industry has significantly contributed to advancing management theories, particularly those focused on sustainable practices and stakeholder decision-making. This research has expanded existing theories, such as the resource-based view (RBV) and stakeholder theory, by profoundly analyzing how decision-making processes occur among internal and external bank stakeholders. By focusing on the influence of various actors, including employees, the board of directors, and customers, this research thoroughly explains the complex dynamics that shape sustainability practices within the banking sector.

This detailed examination gives us valuable insights into how banks make sustainability decisions, affecting their overall management strategies. Identifying these impacts is crucial for banks as they seek to implement more effective and sustainable management practices. Additionally, the research highlights the importance of external factors such as customer demand and investor expectations, demonstrating how these elements influence banks' approaches to sustainability and their growth opportunities. By analyzing the sustainability performance of banks, the research identifies key areas for improvement, driving progress toward more sustainable operations.

Integrating SEM (structural equation modeling) and MCDM-AHP (multi-criteria decision-making – analytic hierarchy process) methods provides a robust framework for quantitatively assessing the importance of different stakeholder groups and their preferences. SEM offers insights into the causal relationships between green criteria, such as green products and environmental management. The mixed method AHP and SEM, on the other hand, prioritizes these criteria based on stakeholder preferences, ensuring that the analysis is grounded in empirical data.

These findings are invaluable for policymakers who aim to develop effective policies, incentives, and support systems that promote green competitiveness within the banking sector. The research contributes to the existing knowledge of sustainable management in the banking sector. It offers practical insights for industry professionals and academics dedicated to fostering sustainable practices in banking. The research's comprehensive approach bridges theoretical insights with

practical applications, providing a solid foundation for developing tailored sustainability strategies that enhance green competitiveness.

Moreover, the research provides fresh insights into creating a model focusing on building a practical tool for banks. This model uniquely incorporates insights into internal banking operations and external stakeholder pressures, forming a comprehensive approach to sustainable management. The tool, developed with input from various stakeholders, including customers and employees, helps banks align their decisions with business goals and stakeholder priorities. This alignment enhances the banks' competitiveness and advances environmental and social sustainability.

By guiding policymakers in creating effective rules and incentives, the tool supports adopting sustainable practices across the banking sector. Overall, this research presents a practical solution to foster sustainability in banks globally, enriching the analysis of sustainable management in the banking industry and driving progress toward green competitiveness. The research promotes sustainable banking practices worldwide through its detailed analysis and innovative approach.

Beyond its theoretical contributions to stakeholder theory and resource-based view (RBV), this research presents a scalable model that can be adapted across banking institutions of varying sizes and market positions. While large multinational banks may utilize the model to develop enterprise-wide green finance portfolios, smaller regional banks can apply it to assess local sustainability priorities and develop community-based green initiatives. Additionally, the research's findings serve as a foundation for policy development, enabling regulators to design incentive structures, sustainability compliance frameworks, and industry-wide green banking standards. Future research can explore cross-regional applications, comparing how banks in different economies implement the model and adjusting decision-making priorities accordingly.

The dissertation presents two interconnected models, with the theoretical model serving as the primary framework, as it is designed to function as a practical decision-making tool after validation:

1. The theoretical model – the main model. This model establishes the conceptual foundation by integrating key management theories, including the stakeholder theory, the resource-based view, and dynamic capabilities. It defines the relationships between sustainable management practices and green competitiveness in the banking sector, providing a structured framework for implementation. With detailed sub-criteria, this model offers a comprehensive approach that will later serve as a validated decision-making tool for sustainable banking strategies.

2. The research model (via SEM–AMOS with validity indicators). This model refines the theoretical framework for empirical testing. It operationalizes

key constructs, applies measurement validity indicators, and is specifically designed for hypothesis testing using structural equation modeling (SEM). While derived from the theoretical model, it streamlines the sub-criteria and is structured for statistical validation.

While both models are interconnected, the theoretical model remains the primary framework, as it is intended for future practical application after validation. The research model serves as a tool for empirical testing, ensuring the theoretical model's robustness and applicability in real-world banking environments. Ultimately, this process leads to the development of a Green Decision-making Tool for Banking, providing a structured and data-driven approach to prioritizing sustainable banking strategies.

3.5. Practical Value and Theoretical Significance of Achieved Results

The practical value of the results achieved in the dissertation is substantial, providing banks with detailed insights and actionable strategies to enhance their sustainability performance. By adopting a stakeholder-centric approach, banks can customize their sustainability strategies to meet stakeholder groups' specific needs and expectations, such as employees, board members, shareholders, individual clients, SMEs, big corporates, and suppliers. This customization enhances stakeholder satisfaction and engagement, making sustainability initiatives more effective and widely supported.

The findings highlight the critical importance of green products across various stakeholder groups, emphasizing the need for banks to innovate and develop eco-friendly banking products like green mortgages, sustainability-linked loans, and green credit/debit cards. Focusing on green product development can attract environmentally conscious customers and provide a competitive edge in the market. Additionally, the research identifies critical areas for operational efficiency improvements, such as implementing energy-saving measures, promoting paperless banking, and using renewable energy sources. These initiatives can lead to cost savings, improved operational efficiency, and a more substantial environmental reputation.

Engaging customers through education and incentives is another practical recommendation. Promoting green banking options and conducting green awareness campaigns can educate customers about the benefits of green banking products and incentivize their adoption, thereby increasing customer loyalty and support for the bank's sustainability initiatives. Furthermore, the research suggests establishing and monitoring key performance indicators (KPIs) related to sustain-

ability goals to track progress and demonstrate commitment to sustainability. Regular reporting on these metrics can enhance transparency and accountability, building stakeholder trust.

The research also emphasizes the importance of continuous improvement through regular reviews and stakeholder feedback. Banks can use these insights to refine their sustainability strategies, ensuring they remain responsive to evolving stakeholder expectations and regulatory requirements.

The theoretical significance of the dissertation is equally profound. By extending the resource-based view (RBV) and stakeholder theory, the research enriches the theoretical analysis of how sustainability practices influence decision-making processes among both internal and external stakeholders in banks. The innovative integration of the analytic hierarchy process (AHP) and multi-criteria decision-making (MCDM) with structural equation modeling (SEM) offers a comprehensive framework for analyzing and prioritizing sustainability criteria. This dual-methodological approach enhances the rigour and depth of sustainability research, providing a robust tool for future studies in the field. The research contributes to the theoretical discourse on stakeholder management and sustainability by providing a nuanced analysis of stakeholder priorities, highlighting the diverse perspectives of employees, board members, shareholders, individual clients, SMEs, big corporates, and suppliers. This detailed categorization of stakeholders provides a granular understanding of their priorities, enriching the theoretical discussion on stakeholder engagement and sustainability. Empirical studies show that banks integrating sustainability into their core strategies have higher customer retention rates and attract socially responsible investors. For instance, banks that offer green financing options report increased engagement from environmentally conscious consumers, reinforcing the value of sustainability in financial decision-making. By empirically validating the importance of various green management criteria, this research offers robust evidence to support the development and implementation of sustainability strategies. This empirical validation strengthens the theoretical foundation for integrating sustainability into banking practices. The proposed model is adaptable to various financial systems, including emerging markets where regulatory constraints differ from those in developed economies. The model has been examined in the context of both Western banking structures and financial institutions in emerging economies to validate its global relevance.

Furthermore, developing and validating a comprehensive model for measuring sustainable management in banking firms provides a valuable theoretical contribution. This model can serve as a basis for future research, enabling scholars to explore and expand upon the relationships between sustainability practices and stakeholder engagement. The practical value of the dissertation lies in its actionable insights and strategies for banks to enhance their sustainability performance.

The theoretical significance is found in its contributions to extending management theories, introducing an integrated methodological framework, and validating sustainability criteria empirically. Policymakers can utilize this framework to develop standardized green banking policies that align with international sustainability goals. In addition, the toolkit provides financial institutions with a step-by-step approach to integrating sustainability into core banking operations, ensuring regulatory compliance and long-term competitiveness.

These contributions advance the practical application and theoretical analysis of green management practices in the banking sector.

- **Adapting the Green Decision-making Prioritization Tool (GDPT) for different banking markets**

The Green Decision-making Prioritization Tool (GDPT) is a flexible decision-making framework that ranks sustainability initiatives based on stakeholder influence and prioritizes green product management (GPM) and environmental management (EMG). While the tool was initially designed to address the needs of banks in emerging markets, its fundamental principles remain applicable to developed markets, provided that the stakeholder weighting and decision criteria are adjusted accordingly.

The GDPT framework is not a one-size-fits-all model; rather, it serves as a structured guidance system that banks can adapt to their specific market conditions. The key differences between banks in emerging and developed markets influence how the tool should be applied:

- Emerging markets. Banks operate in a less regulated sustainability environment, where SMEs and employees play a dominant role in shaping green banking strategies. Banks must focus on practical, cost-effective green initiatives to ensure economic feasibility while meeting growing sustainability regulations.
- Developed markets. Banks face stringent ESG (environmental, social, and governance) compliance requirements, and institutional investors, corporate clients, and regulators have the most influence over sustainability strategies. These banks prioritize long-term ESG leadership, green finance innovation, and adherence to global sustainability standards.

Thus, while the structure of the GDPT remains relevant, the ranking of sustainability priorities and stakeholder influence must be adjusted depending on whether the bank operates in an emerging or developed market.

- **Adjusting stakeholder prioritization in developed markets**

Stakeholder priorities differ between emerging and developed markets, impacting the decision-making process. The table 3.3. highlights these differences. In emerging markets, SMEs and employees are the most critical stakeholders, as

banks play a key role in financing SME sustainability transitions and fostering internal green awareness. In developed markets, institutional investors, regulatory authorities, and big corporate clients dominate, requiring banks to focus on advanced ESG reporting, compliance, and sustainable finance strategies.

Table 3.3. Comparing stakeholder priorities in green banking: emerging vs. developed markets

Stakeholder group	Emerging markets priority	Developed markets priority
Employees	Very high	Moderate
Shareholders	High	Very high (institutional investors, ESG funds)
Board of directors	High	Very high (regulatory compliance-driven)
Individual clients	Moderate	High (green investment options, net-zero banking demand)
SMEs	High	Low-moderate
Big corporates	High	Very high (ESG reporting, corporate sustainability)
Suppliers	Low-moderate	Low

Thus, to apply the GDPT in developed markets, the decision-making framework must prioritize:

- Institutional investors' ESG requirements,
- Corporate sustainability partnerships,
- Regulatory compliance and risk-adjusted green investments.

By shifting the stakeholder weighting model, developed banks can leverage the GDPT to align with investment sustainability trends while maintaining competitive green banking strategies.

- **Revising the ranking of green products and environmental initiatives**

To maximize practical value, banks in developed markets should revise the ranking of sustainability initiatives based on market demand, investor expectations, and regulatory frameworks. This contextual adaptation ensures that sustainability strategies remain relevant and competitive in fast-evolving financial ecosystems. Moreover, aligning initiatives with local priorities enhances stakeholder engagement and supports long-term value creation.

Higher priority in developed markets:

- Sustainability-linked loans (C13) align with corporate ESG strategies and institutional sustainability mandates.
- Green bonds and investment funds (new criterion). Developed banks must focus on issuing and managing green bonds to attract ESG-conscious investors.
- Net-zero banking initiatives (EMG C429) align with global decarbonization targets, requiring banks to actively work toward carbon neutrality.
- Digital sustainability tools (green banking platforms). Given the high digitization of financial services, banks in developed markets must integrate sustainable digital banking solutions.

Lower priority in developed markets:

- Green reward systems (C15). While still useful, incentive-based sustainability programs are less impactful than institutional ESG commitments.
- Low-charge insurance premiums for eco-friendly actions (C16). Insurance incentives play a minor role in driving sustainability adoption in developed financial markets.
- Developed banks should refine their product portfolio based on these adjusted rankings, ensuring that sustainability initiatives align with high-impact ESG objectives.

- **Strategic benefits for developed banks.** While the GDPT was initially designed for emerging markets, developed banks can use this framework to enhance their sustainability strategies through targeted refinements. Key strategic advantages include:

- Aligning with global ESG frameworks. Developed banks can integrate the GDPT with international ESG reporting standards, ensuring compliance with investor and regulatory expectations.
- Optimizing sustainable finance portfolios. By leveraging the GDPT's stakeholder-driven decision model, banks can refine investment portfolios, green credit offerings, and risk-adjusted sustainable financing tools.
- Strengthening corporate partnerships. The GDPT's ranking system enables banks to tailor sustainability-linked financial products that align with multinational corporations' ESG goals, reinforcing green competitiveness in global markets.

The Green Decision-making Prioritization Tool (GDPT) is not a rigid framework; rather, it is a customizable decision-support system that banks in both emerging and developed markets can modify based on stakeholder expectations and sustainability objectives.

The core principles of prioritizing sustainability initiatives based on stakeholder influence are applicable across various banking environments. By adjusting stakeholder weightings and integrating ESG strategies, banks can enhance sustainability integration and align with institutional expectations. This research fulfils its objectives by addressing gaps in the literature, validating high-impact practices such as green product development and environmental management, and offering practical tools adaptable to diverse regulatory and market contexts. Despite some limitations, such as sample size and the subjectivity involved in certain methods, the research maintains methodological rigour through the application of SEM and AHP-MCDM. Future research may explore sustainable governance in non-banking financial institutions and assess the long-term progression of green strategies through longitudinal studies. The findings offer practical value to banks in both emerging and developed markets, supporting strategic efforts to enhance competitiveness in an environmentally conscious global economy.

3.6. Conclusions of the Third Chapter

The Third Chapter developed, validated, and applied a structured model to assess sustainable management in banking institutions. It built on prior insights into green management's influence on decision-making and employed structural equation modeling (SEM) and multi-criteria decision-making (MCDM) through the analytic hierarchy process (AHP) to quantify the impact of various sustainability practices on banking decision-making processes. The primary objective was to construct a robust measurement model that evaluates the effectiveness of green product management, environmental management, human resources management, and platform management in shaping sustainable banking strategies. Empirical validation, supported by statistical testing and case studies, confirmed that green product management (GPM) and environmental management (EMG) exert the most significant influence on sustainable banking, impacting both internal and external stakeholders.

1. A key contribution of this chapter is the development of the Green Decision-making Prioritization Tool (GDPT), a structured framework that ranks sustainability initiatives based on stakeholder influence, feasibility, and strategic impact. The tool enables banks to allocate resources effectively, ensuring the integration of sustainability into governance structures, operational processes, and customer engagement strategies. It achieves this by ranking green management criteria to prioritize sustainability initiatives, mapping stakeholder expectations to align initiatives with key decision-makers, and providing an implementation framework that embeds sustainability into strategic decision-making. Moreover, the

GDPT includes a structured monitoring and adaptation process, incorporating key performance indicators (KPIs) to assess progress and continuously refine green strategies based on regulatory and market developments.

2. The findings underscore that banks that prioritize green product management and environmental management achieve enhanced regulatory compliance, stakeholder alignment, and competitive advantage. Employees and shareholders emerge as pivotal actors in driving green banking initiatives, while customers and SMEs exhibit positive responses to sustainability-linked financial products, requiring tailored incentives to facilitate adoption. Corporate clients prioritize ESG-aligned banking solutions, necessitating customized investment and lending products that support long-term sustainability objectives. Additionally, board members and regulatory bodies play a crucial role in influencing sustainability governance, underscoring the importance of transparent sustainability reporting and compliance with environmental regulations.
3. The chapter further provides banks with a structured roadmap for implementing sustainability strategies and improving operational efficiencies. This includes establishing a dedicated sustainability committee to oversee and drive green initiatives, developing sustainability-linked financial products tailored to different market segments, integrating energy efficiency measures and digital banking solutions to minimize environmental impact, engaging stakeholders through green awareness campaigns and strategic partnerships, and continuously monitoring and refining sustainability strategies in response to evolving regulatory frameworks and market demands.
4. From a theoretical perspective, this research extends the stakeholder theory and the resource-based view (RBV) by offering a nuanced analysis of how sustainability influences decision-making in the banking sector. By integrating SEM and AHP-MCDM, the research introduces a novel quantitative framework for prioritizing green management practices, providing a data-driven approach that bridges theoretical constructs with practical applications. This methodological contribution enhances the academic discourse on sustainable banking, offering a replicable model that financial institutions can adapt to optimize sustainability strategies across various market conditions.

The Third Chapter presents a comprehensive, empirically validated model for assessing and integrating sustainable management in banking institutions. The Green Decision-making Prioritization Tool provides a systematic framework that enables financial institutions to make data-driven sustainability decisions, ensuring alignment with stakeholder expectations and global sustainability standards.

By leveraging this model, banks can enhance their sustainability performance, strengthen stakeholder relationships, and position themselves for long-term resilience in an increasingly eco-conscious financial market.

General Conclusions

1. The scientific literature analysis revealed that sustainable management practices in the banking sector are often studied in isolation, such as CSR or environmental initiatives, without being integrated into a cohesive, stakeholder-aligned strategy. Most existing research is concentrated on developed markets, overlooking the specific challenges of emerging economies like Lebanon, where regulatory fragmentation and limited resources play a major role. A comprehensive theoretical foundation was developed to address this issue by integrating the stakeholder theory, the resource-based view (RBV), the market-based view (MBV), and the dynamic capabilities theory. This theoretical synthesis enables a holistic understanding of sustainability as a strategic, competitive, and stakeholder-driven resource.
2. The proposed framework introduces an innovative conceptual structure that captures the complexity of sustainable management by integrating multiple theoretical perspectives into a coherent model. Its scientific significance lies in offering a new lens through which sustainability can be analyzed as a dynamic and stakeholder-responsive process, enabling researchers and practitioners to explore strategic interactions that were previously unaddressed in fragmented studies. This innovation supports the advancement of theory-building in sustainability and competitiveness,

particularly within institutionally diverse and resource-constrained environments.

3. The dissertation applied structural equation modeling (SEM) to evaluate the relationship between sustainable practices and stakeholder decision-making to validate hypotheses and analyze key variable relationships. In parallel, the analytic hierarchy process within a multi-criteria decision-making framework (AHP-MCDM) was used to prioritize sustainable management practices based on their importance to different stakeholder groups. This methodological combination allowed for an objective and data-driven evaluation of stakeholder preferences, internal (employees, board members, and shareholders) and external (clients, SMEs, and suppliers), and how these preferences shape sustainability priorities in banking institutions.
4. The findings confirm that stakeholder-driven sustainability practices, particularly green product management and environmental management, significantly influence decision-making and green competitiveness. Internal stakeholders prioritized operational initiatives, while external stakeholders focused on service quality and environmental responsibility. Based on these results, the research provides practical recommendations that help banks in emerging and developed markets design targeted sustainability strategies, allocate resources efficiently, and align with both ESG expectations and stakeholder needs. The validated approach transforms sustainability from a compliance-driven effort into a strategic asset, supporting long-term financial performance, institutional trust, and competitive advantage.

References

Abdelfattah, F., Salah, M., Dahleez, K., Darwazeh, R., & Al Halbusi, H. (2024). The future of competitive advantage in Oman: Integrating green product innovation, AI, and intellectual capital in business strategies. *International Journal of Innovation Studies*, *8*(2), 154–171. https://doi.org/10.1016/j.ijis.2024.02.001

Adams, T. (2017). The standard theory of administrative unlawfulness. *Cambridge Law Journal*, *76*(2), 289–310. https://doi.org/10.1017/S0008197317000332

Agnese, P., Cerciello, M., Oriani, R., & Taddeo, S. (2024). ESG controversies and profitability in the European banking sector. *Finance Research Letters*, *61*, Article 105042. https://doi.org/10.1016/j.frl.2024.105042

Akomea-Frimpong, I., Adeabah, D., Ofosu, D., & Tenakwah, E. J. (2022). A review of studies on green finance of banks, research gaps and future directions. *Journal of Sustainable Finance and Investment*, *12*(4), 1241–1264. https://doi.org/10.1080/20430795.2020.1870202

Alhassan, T. F., Ansah, E. O., Niyazbekova, S. U., & Blokhina, T. K. (2024). The impact of foreign investment in financing sustainable development in Sub-Saharan African countries. *Russian Journal of Economics*, *10*(1), 60–83. https://doi.org/10.32609/j.ruje.10.105745

Ali, M., Puah, C. H., Ali, A., Raza, S. A., & Ayob, N. (2022). Green intellectual capital, green HRM and green social identity toward sustainable environment: a new integrated framework for Islamic banks. *International Journal of Manpower*, *43*(3), 614–638. https://doi.org/10.1108/IJM-04-2020-0185

Alshebami, A. S. (2021). Evaluating the relevance of Green Banking practices on Saudi Banks' green image: The mediating effect of employees' green behavior. *Journal of Banking Regulation*, *22*(4), 275–286. https://doi.org/10.1057/S41261-021-00150-8

Ardizzi, G., Crudu, F., & Petraglia, C. (2019). Innovation and cost efficiency in the banking industry: The Role of electronic payments. *Economic Notes*, *483*(1), 273–292. https://doi.org/10.1111/ecno.12121

Arezki, R., Bolton, P., Peters, S., Samama, F., & Stiglitz, J. (2017). From global savings glut to financing infrastructure. *Economic Policy*, *32*(90), 223–261. https://doi.org/10.1093/epolic/eix005

Aristei, D., & Gallo, M. (2022). Bank management, finance and sustainability. In *Bank Management, Finance and Sustainability*. MDPI. https://doi.org/10.3390/books978-3-0365-3331-5

Arulrajah, A. A., & Opatha, H. H. D. N. P. (2016). Analytical and theoretical perspectives on Green Human Resource Management: A simplified underpinning. *International Business Research*, *9*(12), 153. https://doi.org/10.5539/ibr.v9n12p153

Ashrafi, M., Magnan, G. M., Adams, M., & Walker, T. R. (2020). Understanding the conceptual evolutionary path and theoretical underpinnings of corporate social responsibility and corporate sustainability. *Sustainability (Switzerland)*, *12*(3). https://doi.org/10.3390/su12030760

Asian Development Bank. (2022). *Green bond market survey for Thailand*. Asian Development Bank Institute. https://doi.org/10.22617/TCS220262-2

Asongu, S. A., & Biekpe, N. (2018). ICT, information asymmetry and market power in African banking industry. *Research in International Business and Finance*, *44*, 518–531. https://doi.org/10.1016/j.ribaf.2017.07.121

Asongu, S. A., & Odhiambo, N. M. (2019). Mobile banking usage, quality of growth, inequality and poverty in developing countries. *Information Development*, *35*(2), 303–318. https://doi.org/10.1177/0266666917744006

Assunção, E. R. G. T. R., Ferreira, F. A. F., Meidutė-Kavaliauskienė, I., Zopounidis, C., Pereira, L. F., & Correia, R. J. C. (2020). Rethinking urban sustainability using fuzzy cognitive mapping and system dynamics. *International Journal of Sustainable Development and World Ecology*, *27*(3), 261–275. https://doi.org/10.1080/13504509.2020.1722973

Astrauskaitė, I. (2016). Multivariate Analysis of short and long-impact indicators for corporate bond market Development. *Business, Management and Education*, *14*(1), 116–135. https://doi.org/10.3846/bme.2016.318

Azizzadeh, F., Islam, M., Naushin, N., Zupok, S., Sobón, D., Sobón, J., Selezneva, R., & Jadah, H. (2022). Modeling employees' skills for sustainable banking services. *Frontiers in Sociology*, *7*, 1–39. https://doi.org/10.3389/fsoc.2022.985158

Bag, S., Wood, L. C., Xu, L., Dhamija, P., & Kayikci, Y. (2020). Big data analytics as an operational excellence approach to enhance sustainable supply chain performance.

Resources, Conservation and Recycling, 153. https://doi.org/10.1016/j.resconrec.2019.104559

Barysienė, J., Batarlienė, N., Bazaras, D., Čižiūnienė, K., Griškevičienė, D., Griškevičius, A. J., Lazauskas, J., Mačiulis, A., Palšaitis, R., Vasiliauskas, A. V., & Vasilienė-Vasiliauskienė, V. (2015). Analysis of the current logistics and transport challenges in the context of the changing environment. *Transport, 30*(2), 233–241. https://doi.org/10.3846/16484142.2015.1046403

Battiston, S., Mandel, A., Monasterolo, I., Schütze, F., & Visentin, G. (2017). A climate stress-test of the financial system. *Nature Climate Change*, *7*(4), 283–288. https://doi.org/10.1038/nclimate3255

Bezerra, P., Arruda, A., Laila, T., & Moroni, I. (2018). Strategic design: Enhancing experiences and developing local products. *Advances in Intelligent Systems and Computing, 588*, 453–461. https://doi.org/10.1007/978-3-319-60582-1_45

Bezpartochnyi, M. (2019). Strategies for sustainable socio- economic development and mechanisms their implementation in the global dimension. In *Business and Entrepreneurship* (Vol. 1). VUZF Publishing House "St. Grigorii Bogoslov", Sofia.

Bhattacharya, S., Momaya, K. S., & Iyer, K. C. (2020). Benchmarking enablers to achieve growth performance: a conceptual framework. In *Benchmarking* (Vol. 27, Issue 4, pp. 1475–1501). Emerald Group Publishing Ltd. https://doi.org/10.1108/BIJ-08-2019-0376

Bilan, Y., Rubanov, P., Vasylieva, T., & Lyeonov, S. (2019). The influence of industry 4.0 on financial services: Determinants of alternative finance development. *Polish Journal of Management Studies*, *19*(1), 70–93. https://doi.org/10.17512/pjms.2019.19.1.06

BLOM Bank SAL. (2020). *BLOM Bank products and services*. https://www.blombank.com/english/commercial-and-corporate-banking/corporatebanking

Busch, D., Ferrarini, G., & Grunewald, S. (2024). *Sustainable finance in Europe: corporate governance, financial stability and financial markets* (2nd ed.). Springer International Publishing, Palgrave Macmillan. https://doi.org/10.1007/978-3-031-53696-0

Camisón, C. (2020). Competitiveness and sustainability in tourist firms and destinations. *Sustainability*, *12*(6). https://doi.org/10.3390/su12062388

Cantero-Saiz, M., Polizzi, S., & Scannella, E. (2024). ESG and asset quality in the banking industry: The moderating role of financial performance. *Research in International Business and Finance*, *69*. https://doi.org/10.1016/j.ribaf.2024.102221

Caramichael, J., & Rapp, A. C. (2024). The green corporate bond issuance premium. *Journal of Banking and Finance*, *162*. https://doi.org/10.1016/j.jbankfin.2024.107126

Caruso, L. (2018). Digital innovation and the fourth industrial revolution: Epochal social

changes? *AI and Society*, *33*(3), 379–392. https://doi.org/10.1007/s00146-017-0736-1

Castagna, F., Centobelli, P., Cerchione, R., Oropallo, E., Shashi, S., & Serena, S. (2020). Assessing SMEs' Internationalisation Strategies in Action. *Applied Sciences*, *10*(14). https://doi.org/10.3390/app10144743

Chaudhuri, A., Subramanian, N., & Dora, M. (2022). Circular economy and digital capabilities of SMEs for providing value to customers: Combined resource-based view and ambidexterity perspective. *Journal of Business Research*, *142*, 32–44. https://doi.org/10.1016/j.jbusres.2021.12.039

Chen, X., Xu, H., & Anwar, S. (2024). Bank competition, government interest in green initiatives and carbon emissions reduction: An empirical analysis using city-level data from China. *North American Journal of Economics and Finance*, *72*. https://doi.org/10.1016/j.najef.2024.102144

Cheng, X., Long, R., & Chen, H. (2018). Obstacle diagnosis of green competition promotion: a case study of provinces in China based on catastrophe progression and fuzzy rough set methods. *Environmental Science and Pollution Research*, *25*(5), 344–360. https://doi.org/10.1007/s11356-017-0762-z

Cheng, X., Long, R., Chen, H., & Li, Q. (2019). Coupling coordination degree and spatial dynamic evolution of a regional green competitiveness system – A case study from China. *Ecological Indicators*, *104*(1), 489–500. https://doi.org/10.1016/j.ecolind.2019.04.003

Cohen, V. (2024). Application of change management towards green business process management within the banking sector. In *Business Process Management Programme*. Vilnius University.

Cragg, T., & Mcnamara, T. (2015). An ICT-based framework to improve global supply chain integration for final assembly SMES. *Journal of Entreprise Information Management*, *31*(5), 634–657. https://doi.org/10.1108/JEIM-04-2014-0038

Demetris Vrontis, Weber, Y., & Tsoukatos, E. (2023). Business transformation in uncertain global environments. *16th Annual Conference of the EuroMed Academy of Business*, 28–722.

Deslatte, A., & Stokan, E. (2020). Sustainability synergies or Silos? The opportunity costs of local government organizational capabilities. *Public Administration Review*, *80*(6), 1024–1034. https://doi.org/10.1111/puar.13237

Do Rosário Cabrita, M., Užiene˙, L., Garcia-Perez, A., & Viedma, J. M. (2023). Intellectual capital for enhancing sustainable industrialization: towards the sustainable development goal (SDG) 9. In *Proceedings of the European Conference on Knowledge Management, ECKM*, 24(1) (p.p.184–190). https://doi.org/10.34190/eckm.24.1.1288

Drago, C., Di Nallo, L., & Russotto, M. L. (2024). Measuring and classifying the social sustainability of European banks: an analysis using interval-based composite indicators. *Environmental Impact Assessment Review*, *105*.

https://doi.org/10.1016/j.eiar.2024.107434

Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., Hazen, B. T., & Roubaud, D. (2017). Examining top management commitment to TQM diffusion using institutional and upper echelon theories. *International Journal of Production Research*, *56*(8), 2988–3006. https://doi.org/10.1080/00207543.2017.1394590

Duffett, R., Edu, T., Haydam, N., Negricea, I. C., & Zaharia, R. (2018). A multi-dimensional approach of green marketing competitive advantage: A perspective of smallmedium andmicro enterprises from Western Cape, South Africa. *Sustainability (Switzerland)*, *10*(10). https://doi.org/10.3390/su10103764

Ellahi, A., Jillani, H., & Zahid, H. (2021). Customer awareness on Green banking practices. *Journal of Sustainable Finance and Investment*, *11*(3), 245–260. https://doi.org/10.1080/20430795.2021.1977576

Fajar, A. P., & Soeling, P. D. (2017). *The effect of HRM practices on employee organizational citizenship behavior in ICT companies*. 282–294. https://doi.org/10.2991/icaspgs-icbap-17.2017.11

Fashli, A., Herdiansyah, H., & Saragi, P. A. (2018). Green banking and infrastructure project financing for sustainable development. *E3S Web of Conferences*, *73*(10001), 1–4. https://doi.org/10.1051/e3sconf/20187310001

Flögel, F., & Beckamp, M. (2019). Will FinTech make regional banks superfluous for small firm finance? Observations from soft information-based lending in Germany. *Economic Notes*, *48*(3), 273–292. https://doi.org/10.1111/ecno.12159

Francis, B., Hasan, I., Liu, L., & Wang, H. (2019). Employee Treatment and Contracting with Bank Lenders: An Instrumental Approach for Stakeholder Management. *Journal of Business Ethics*, *158*(4), 1029–1046. https://doi.org/10.1007/S10551-017-3722-0

Fu, X., Guo, M., & Zhanwen, N. (2017). Applying the green Embedded lean production model in developing countries: A case study of China. *Environmental Development*. https://doi.org/10.1016/j.envdev.2017.02.004

Galletta, S., Mazzù, S., Naciti, V., & Paltrinieri, A. (2024). A PRISMA systematic review of greenwashing in the banking industry: A call for action. *Research in International Business and Finance*, *69*, Article 102262. https://doi.org/10.1016/j.ribaf.2024.102262

Gautam, V. (2020). Examining environmental friendly behavior of tourists towards sustainable development. *Journal of Environmental Management*, *276*(September), Article 111292. https://doi.org/10.1016/j.jenvman.2020.111292

Gü Ner, S. (2018). Evaluation of the evolution of green management with a Kuhnian perspective. *Business Research*, *11*, 309–328. https://doi.org/10.1007/s40685-017-0049-8

Harry Ndukwu, N. (2022). *Valuation of climate change impact on banking sector (Masters thesis)*. Vilnius University.

Hermans, F. (2018). The potential contribution of transition theory to the analysis of

bioclusters and their role in the transition to a bioeconomy. *Biofuels, Bioproducts and Biorefining*, *12*, 265–276. https://doi.org/10.1002/bbb.1861

Horváthová, E. (2010). Does environmental performance affect financial performance? A meta-analysis. *Ecological Economics*, *70*(1), 52–59. https://doi.org/10.1016/j.ecolecon.2010.04.004

Huguenin, A., & Jeannerat, H. (2017). Creating change through pilot and demonstration projects: Towards a valuation policy approach. *Research Policy*, *46*(3), 624–635. https://doi.org/10.1016/j.respol.2017.01.008

Huntley Lewis, E. O. (2019). Environmental regulations and their effect on innovation and competitiveness in tourism in Barbados, Guyana and Jamaica. *Worldwide Hospitality and Tourism Themes*, *11*(2), 147–154. https://doi.org/10.1108/whatt-12-2018-0085

Igbudu, N., Garanti, Z., & Popoola, T. (2018). Enhancing bank loyalty through sustainable banking practices: The mediating effect of corporate image. *Sustainability*, *10*(11), 4050. https://doi.org/10.3390/su10114050

ING. (2018). ING Green Bond: Sustainability report. *Retrieved from https://www.ing.com/Sustainability/Sustainable-business/ING-Green-Bond.htm*. https://www.ing.com/Sustainability/Sustainable-business/ING-Green-Bond.htm

International Finance Corporation (IFC). (2014). *Greening the banking system: Experiences from the sustainable banking Network (SBN). Input paper for the G20 Green Finance Study Group*. www.ifc.org/performancestandards

International Labour Office (ILO). (2018). *Environmental sustainability and decent work*. International Labour Organization. https://www.ilo.org/weso-greening/documents/WESO_Greening_EN_chap1_web.pdf

International Labour Organization. (2018). *World Employment Social Outlook-Greening with jobs*. International Labour Organization. https://www.ilo.org/sites/default/files/wcmsp5/groups/public/%40dgreports/%40dcomm/%40publ/documents/publication/wcms_628654.pdf

International Telecommunication Union (ITU). (2014). *Measuring the information society report: 2014*. International Telecommunication Union.

Iqbal, M., Nisha, N., Rifat, A., & Panda, P. (2018). Exploring client perceptions and intentions in emerging economies: The case of Green Banking Technology. *International Journal of Asian Business and Information Management*, *9*(3), 14–34. https://doi.org/10.4018/IJABIM.2018070102

Ju, Y., Wang, Y., Cheng, Y., & Jia, J. (2019). Investigating the impact factors of the logistics service supply chain for sustainable performance: Focused on integrators. *Sustainability (Switzerland)*, *11*(2). https://doi.org/10.3390/su11020538

Kaium Masud, M. A., Nurunnabi, M., & Bae, S. M. (2018). *The effects of corporate governance on environmental sustainability reporting: empirical evidence from South Asian countries*. https://doi.org/10.1186/s41180-018-0019-x

Karim, S., Akhtar, M. U., Tashfeen, R., Raza Rabbani, M., Rahman, A. A. A., & AlAbbas, A. (2022). Sustainable banking regulations pre and during coronavirus outbreak: the moderating role of financial stability. *Economic Research*, *35*(1), 3360–3377. https://doi.org/10.1080/1331677X.2021.1993951

Katta, A. K., Subbarao, P., & Ramana, S. V. (2019). *HRD – banks in the ICT era a focus on private sector banks*. Journal of Mechanics of Continua and Mathematical Sciences, *14*(5), 943–957.

Khan, Z. (2019). Implementation of lean practices in banks : A qualitative research. *RISUS – Journal on Innovation and Sustainability*, *10*(2), 1–24. https://doi.org/10.23925/2179-3565.2019v10i2p18-24

Khvesyk, M., Obykhod, H., Bystryakov, I., & Khvesyk, Y. (2018). Assessment of the safety of environment in terms of sustainable development. *Economic Annals-XXI*, *170*(3–4), 22–26. https://doi.org/10.21003/ea.V170-04

Kim, S., & Chiang, B. G. (2017). The role of sustainability practices in international port operations: an analysis of moderation effect. *Journal of Korea Trade*, *21*(2), 125–144. https://doi.org/10.1108/JKT-03-2017-0025

Kodama, M. (2017). Developing strategic innovation in large corporations-The dynamic capability view of the firm. *Knowledge and Process Management*, *24*(4), 221–246. https://doi.org/https://doi.org/10.1002/kpm.1554

Kokkonen, K., & Ojanen, V. (2018). From opportunities to action – An integrated model of small actors' engagement in bioenergy business. *Journal of Cleaner Production*, *182*, 496–508. https://doi.org/10.1016/j.jclepro.2018.02.013

Konuk, F. A., Rahman, S. U., & Salo, J. (2015). Antecedents of green behavioral intentions: a cross-country study of Turkey, Finland and Pakistan. *International Journal of Consumer Studies*, *39*(6), 586–596. https://doi.org/10.1111/ijcs.12209

Krisciukaityte, K., Balezentis, T., & Streimikiene, D. (2023). Linking financial performance and efficiency to sustainability in banking sector: A literature synthesis. *Journal of Business Economics and Management*, *24*(3), 506–526. https://doi.org/10.3846/jbem.2023.19462

Kubus, R., Pérez-Iñigo, J. M., & González Fernández, S. (2020). Innovation ecosystems in banking and monetary sector: Competitiveness versus sustainability ecosistemas. *Mercados y Negocios*, *1*(41), 19–44. https://doi.org//10.32870/myn.v0i41.7512

Kumar, K., & Prakash, A. (2019). Examination of sustainability reporting practices in Indian banking sector. *Asian Journal of Sustainability and Social Responsibility*, *4*(1). https://doi.org/10.1186/s41180-018-0022-2

Kumar, K., & Prakash, A. (2020). Managing sustainability in banking: extent of sustainable banking adaptations of banking sector in India [Article]. In *Environment, development and sustainability* (Vol. 22, Issue 6, pp. 5199–5217). Springer Netherlands. https://doi.org/10.1007/s10668-019-00421-5

Lafuente, E., & Szerb, L. (2021). Guest editorial. *Competitiveness Review*, *31*(3), 353–

360. https://doi.org//10.1108/CR-05-2021-165

Lapinskaite, I., Skvarciany, V., & Janulevicius, P. (2020). Impact of investment sources for sustainability on a country's sustainable development: Evidence from the EU. *Sustainability (Switzerland)*, *12*(6), 1–23. https://doi.org/10.3390/su12062421

Leheza, Y., Odyntsova, I., & Dmytrenko, N. (2021). Theory and legal regulation of information support of administrative procedures in Ukraine. *Ratio Juris*, *16*(32), 291–306. https://doi.org//10.24142/raju.v16n32a12

Levickaitė, R. (201). Modelling of the creative economy sustainable development [Doctoral dissertation, Vilnius Gediminas Technical University]. Vilnius Gediminas Technical University Repository. https://doi.org/10.20334/2311-m

Lin, C. T., Chang, Y. H., & Mi, C. (2017). Develop eco-friendly enterprise: Aligning enablers with strategy. *Sustainability (Switzerland)*, *9*(4). https://doi.org/10.3390/su9040570

Lóska, G., & Uotila, J. (2023). Digital transformation in corporate banking: Toward a Blended Service Model. *California Management Review*, *66*(3) 93–115. https://doi.org/10.1177/00081256231207429

Maitre, N., Behrendt, C., Canonge, J., Cotinguiba, L., Duran, F., Schmitt, V., Urban, S., Capaldo, J., & Montt, G. (2018). Protecting workers and the environment. *World Employment and Social Outlook*, *2018*(2), 103–126. https://doi.org/10.1002/wow3.141

Makarchenko, M., Nerkararian, S., & Shmeleva, I. A. (2016). How traditional banks should work in smart city. *Communications in Computer and Information Science*, *674*, 123–134. https://doi.org/10.1007/978-3-319-49700-6_13

Manigandan, P., Alam, M. S., Murshed, M., Ozturk, I., Altuntas, S., & Alam, M. M. (2024). Promoting sustainable economic growth through natural resources management, green innovations, environmental policy deployment, and financial development: Fresh evidence from India. *Resources Policy*, *90*. https://doi.org/10.1016/j.resourpol.2024.104681

Manolas, E., Tsantopoulos, G., & Dimoudi, K. (2017). Energy saving and the use of "green" bank products: the views of the citizens. *Management of Environmental Quality: An International Journal*, *28*(5), 745–768. https://doi.org/10.1108/MEQ-05-2016-0042/FULL/XML

Martins, G. D., Gonçalves, R. F., & Petroni, B. C. (2019). Blockchain in manufacturing revolution based on machine to machine transaction: a systematic review. *Brazilian Journal of Operations & Production Management*, *16*(2), 294–302. https://doi.org/10.14488/bjopm.2019.v16.n2.a10

Masud, M. A. K., Hossain, M. S., & Kim, J. D. (2018). Is green regulation effective or a failure: Comparative analysis between Bangladesh Bank (BB) green guidelines and global reporting initiative guidelines. *Sustainability (Switzerland)*, *10*(4). https://doi.org/10.3390/su10041267

Masud, M. A. K., Nurunnabi, M., & Bae, S. M. (2018). The effects of corporate governance on environmental sustainability reporting: empirical evidence from South Asian countries. *Asian Journal of Sustainability and Social Responsibility*, *3*(1), 3. https://doi.org/10.1186/s41180-018-0019-x

Mečionytė, M. (2021). *Reserach on feasibility of implementation of open banking as a product of financial technologies in lithuanian market* [Master's thesis, Vilnius Gediminas Technical University]. Vilnius Gediminas Technical University Repository. https://vb.vgtu.lt/object/elaba:116837405/116837405.pdf

Mintrom, M. (2016). Herbert A. Simon, Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization. In M. Lodge, E. C. Page, and S. J. Balla (Eds.), *The Oxford Handbook of Classics in Public Policy and Administration*, Oxford Handbooks, 12–21. https://doi.org/10.1093/oxfordhb/9780199646135.013.22

Misiūnaitė, R. (2020). *Model of knowledge transfer for the development of international activities in knowledge-intensive business service sector* [Master's thesis, Vilnius Gediminas Technical University]. Vilnius Gediminas Technical University Repository. https://etalpykla.vilniustech.lt/handle/123456789/110817

Nevárez, V. L., & Féliz, B. D. Z. (2019). Social responsibility in the dimensions of corporate citizenship:a case study in agricultural manufacturing. *CIRIEC*, *97*, 179–211. https://doi.org/10.7203/CIRIEC-E.97.12566

Oduor, J., Ngoka, K., & Odongo, M. (2017). Capital requirement, bank competition and stability in Africa. *Review of Development Finance*, *7*(1), 45–51. https://doi.org/10.1016/j.rdf.2017.01.002

Okyere-Kwakye, E., & Md Nor, K. (2021). The intention of banks to adopt green banking in an emerging market: the employees' perspective. *Economic and Political Studies*, *9*(4), 497–504. https://doi.org/10.1080/20954816.2021.1899621

Park, H., & Kim, J. D. (2020). Transition towards green banking: role of financial regulators and financial institutions. *Asian Journal of Sustainability and Social Responsibility*, *5*(1). https://doi.org/10.1186/S41180-020-00034-3/FIGURES/5

Pinillos, A., & Fernández Mateo, J. L. (2018). Revisión crítica de la dimensión Gobierno Corporativo en los cuestionarios de los Índices de Sostenibilidad / A critical review of the Corporate Governance dimension in the Sustainability Indexes questionnaires. *Revista de Comunicación*, *17*(2). https://doi.org/10.26441/RC17.2-2018-A1

Pu, G., Wong, W. K., Du, Q., Al Shraah, A., Alromaihi, A., & Muda, I. (2024). Asymmetric impact of natural resources, fintech, and digital banking on climate change and environmental sustainability in BRICS countries. *Resources Policy*, *91*. https://doi.org/10.1016/j.resourpol.2024.104872

Rahman, M. H., Rahman, J., Tanchangya, T., & Esquivias, M. A. (2023). Green banking initiatives and sustainability: A comparative analysis between Bangladesh and India. *Research in Globalization*, *7*(December), Article 100184. https://doi.org/10.1016/j.resglo.2023.100184

Ranjan, A. K., & Hussain, M. (2016). Terminal authentication in M2M communications

in the context of internet of things. *Procedia Computer Science*, *89*, 34–42. https://doi.org/10.1016/j.procs.2016.06.006

Riegler, M. (2023). Towards a definition of sustainable banking – a consolidated approach in the context of guidelines and strategies. *International Journal of Corporate Social Responsibility*, *8*(1). https://doi.org/10.1186/s40991-023-00078-4

Ritzel, C., Mack, G., Portmann, M., Heitkämper, K., & El Benni, N. (2020). Empirical evidence on factors influencing farmers' administrative burden: A structural equation modeling approach. *PLOS ONE*, *15*(10), e0241075. https://doi.org/10.1371/JOURNAL.PONE.0241075

Rosendal, B., Münster, M., & Bramstoft, R. (2024). Renewable fuel production and the impact of hydrogen infrastructure : A case study of the Nordics. *Energy*, *297*. https://doi.org/10.1016/j.energy.2024.131234

Rubel, M. R. B., Kee, D. M. H., & Rimi, N. N. (2020). The influence of green HRM practices on green service behavior: the mediating effect of green knowledge sharing. *Employee Relations*, *43*(5), 996–1015. https://doi.org/10.1108/ER-04-2020-0163

Sachitra, V. (2016). Review of Competitive Advantage Measurements: Reference on Agribusiness. *Review Article Sachitra; JSRR*, *12*(6), 1–11. https://doi.org/10.9734/JSRR/2016/30850

Sampurna Panigrahi, S., Bahinipati, B., & Jain, V. (2019). Sustainable supply chain management A review of literature and implications for future research. *Management of Environmental Quality: An International Journal*, *30*(5), 1001–1049. https://doi.org/10.1108/MEQ-01-2018-0003

Seyfang, G., & Gilbert-Squires, A. (2019). Move your money? Sustainability transitions in regimes and practices in the UK retail banking sector. *Ecological Economics*, *156*, 224–235. https://doi.org/10.1016/J.ECOLECON.2018.09.014

Sharma, M., & Choubey, A. (2022). Green banking initiatives: a qualitative study on Indian banking sector. *Environment, Development and Sustainability*, *24*(1), 293–319. https://doi.org/10.1007/S10668-021-01426-9

Sharma, S., Gupta, C., Malhotra, R. K., & Upreti, H. (2024). Sustainable Banking Practices : Impact , challenges and opportunities. *RAWMU*, *556*, Article 01031. https://doi.org//10.1051/e3sconf/202455601031

Shkodina, I., Derid, I., & Zelenko, O. (2019). Digital transformation of global banking: challenges and prospects. *Financial and Credit Activity: Problems of Theory and Practice*, *3*(30), 45–51. https://doi.org/10.18371/fcaptp.v3i30.179680

Shlikhter, A. A. (2020). Business strategies of companies in the context of sustainable development. *World Economy and International Relations*, *64*(4), 37–44. https://doi.org/10.20542/0131-2227-2020-64-4-37-44

Skvarciany, V., & Jurevičienė, D. (2024). Does Digital Economy Promote Sustainable Development: Case of EU Countries. *Panoeconomicus*, *71*(2), 295–313. https://doi.org/10.2298/PAN211217020S

Soebandrija, K. (2019). Dynamic capability and disruptive innovation within perspectives of industry 4.0, research result and innovation on people's prosperity. *IOP Conf. Series: Materials Science and Engineering*, *508*, Article 012101. https://doi.org/10.1088/1757-899X/508/1/012101

Song, Deng, & Wu. (2019). Comparing the influence of green credit on commercial bank profitability in china and abroad: Empirical test based on a dynamic panel system using GMM. *International Journal of Financial Studies*, *7*(4), 1–16. https://doi.org/10.3390/ijfs7040064

Stauropoulou, A., Sardianou, E., Malindretos, G., Evangelinos, K., & Nikolaou, I. (2023). The effects of economic, environmentally and socially related SDGs strategies of banking institutions on their customers' behavior. *World Development Sustainability*, *2*, 1–11. https://doi.org/10.1016/j.wds.2023.100051

Stock, T., Obenaus, M., Kunz, S., & Kohl, H. (2018). Industry 4.0 as enabler for a sustainable development: A qualitative assessment of its ecological and social potential. *Process Safety and Environmental Protection*, *118*, 254–267. https://doi.org/10.1016/j.psep.2018.06.026

Streimikiene, D., & Kaftan, V. (2021). Green finance and the economic threats during COVID-19 pandemic. *Terra Economicus*, *19*(2), 105–113. https://doi.org/10.18522/2073-6606-2021-19-2-105-113

Sukirman, Y. A. (2018). Developing a green lending model for renewable energy project (case study electricity from biogas fuel at Palm Oil Industry). *IOP Conference Series: Earth and Environmental Science*, *131*(1). https://doi.org/10.1088/1755-1315/131/1/012037

Rose, S., Spinks, N., & Canhoto, A. I. (2024). *Management reasearch, applying the principles of business research methods.* (2nd ed.). Routledge. https://doi.org/10.4324/9781003381006

Taneja, S., & Ali, L. (2021). Determinants of customers' intentions towards environmentally sustainable banking: Testing the structural model. *Journal of Retailing and Consumer Services*, *59*, Article 102418. https://doi.org/10.1016/j.jretconser.2020.102418

Tsai, S.-B., Saito, R., Lin, Y.-C., Chen, Q., & Zhou, J. (2015). Discussing measurement criteria and competitive strategies of green suppliers from a green law perspective. *Engineering Manufacture*, *229*(S1), 135–145. https://doi.org/10.1177/0954405414558740

Tvaronavičienė, M., & Nassar, N. (2021a). A systematic theoretical review on sustainable management for green competitiveness. *Insights into Regional Development*, *3*(2), 267–281. https://doi.org/10.9770/ird.2021.3.2(7)

Tvaronavičienė, M., & Nassar, N. (2021b). ICT management for green competitiveness in the banking sector. *The Conference on Business Management and Economic Engineering (CIBBME), May*, 1–7. https://doi.org/10.3846/cibmee.2021.587

Úbeda, F., Forcadell, F. J., Aracil, E., & Mendez, A. (2022). How sustainable banking

fosters the SDG 10 in weak institutional environments. *Journal of Business Research*, *146*, 277–287. https://doi.org/10.1016/j.jbusres.2022.03.065

Vinícius, R., Jordão, D., Novas, J., & Gupta, V. (2020). The role of knowledge-based networks in the intellectual capital and organizational performance of small and medium-sized enterprises. *Kybernetes*, *49*(1), 116–140. https://doi.org/10.1108/K-04-2019-0301

Wang, B., & Zhao, W. (2022). Interplay of renewable energy investment efficiency, shareholder control and green financial development in China. *Renewable Energy*, *199*, 192–203. https://doi.org/10.1016/J.RENENE.2022.08.122

Wang, C., Li, X. wu, Wen, H. xing, & Nie, P. yan. (2021). Order financing for promoting green transition. *Journal of Cleaner Production*, *269*(1), Article 125415. https://doi.org/10.1016/J.JCLEPRO.2020.125415

Wang, J., Chen, X., Li, X., Yu, J., & Zhong, R. (2020). The market reaction to green bond issuance: Evidence from China. *Pacific Basin Finance Journal*, *60*, Article 101294. https://doi.org/10.1016/J.PACFIN.2020.101294

Wang, S., & Li, J. (2024). How carbon emission trading mechanism and supply chain digitization affect manufacturing enterprises' competitiveness? Evidence from China. *Journal of Cleaner Production*, *452*, Article 142164. https://doi.org/10.1016/j.jclepro.2024.142164

Wang, S., Wan, J., Imran, M., Li, D., & Zhang, C. (2018). Cloud-based smart manufacturing for personalized candy packing application. *Journal of Supercomputing*, *74*(9), 4339–4357. https://doi.org/10.1007/s11227-016-1879-4

Wang, Y. (2016). What are the biggest obstacles to growth of SMEs in developing countries? – An empirical evidence from an enterprise survey. *Borsa Instanbul Rev*, *16*(3), 167–176. https://doi.org/10.1016/j.bir.2016.06.001

World Bank Group. (2018). *The World Bank Annual Report 2018*. https://doi.org/10.1596/978-1-4648-1296-5

Xu, X., Xia, Y., Qiu, A., Choi, M., & Park, J. (2024). *A study on Overseas Chinese bank in Indonesia – Focusing on Bank Central Asia*. *International Journal of Religion*, *5*(4), 492–501. https://doi.org/10.61707/0hpmm961

Yadav, S., Samadhiya, A., Kumar, A., Luthra, S., & Pandey, K. K. (2024). Nexus between fintech, green finance and natural resources management: Transition of BRICS nation industries from resource curse to resource blessed sustainable economies. *Resources Policy*, *91*, Article 104903. https://doi.org/10.1016/j.resourpol.2024.104903

Yan, M., & Gong, X. (2024). Impact of green credit on green finance and corporate emissions reduction. *Finance Research Letters*, *60*, Article 104900. https://doi.org/10.1016/j.frl.2023.104900

Yousef Farhan, B. (2024). Visionary leadership and innovative mindset for sustainable business development: Case studies and practical applications. *Research in Globalization*, *8*, Article 100219. https://doi.org/10.1016/j.resglo.2024.100219

Yuan, F., & Gallagher, K. P. (2018). Greening development lending in the Americas: Trends and determinants. *Ecological Economics*, *154*, 189–200. https://doi.org/10.1016/J.ECOLECON.2018.07.009

Zaid, A. A., Jaaron, A. A. M., & Talib Bon, A. (2018). The impact of green human resource management and green supply chain management practices on sustainable performance: an empirical study. *Journal of Cleaner Production*, *204*, 965–979. https://doi.org/10.1016/J.JCLEPRO.2018.09.062

Zangoueinezhad, A., Azar, A., & Kazazi, A. (2011). Using SCOR model with fuzzy MCDM approach to assess competitiveness positioning of supply chains: focus on shipbuilding supply chains. *Maritime Policy & Management*, *38*(1), 93–109. https://doi.org/10.1080/03088839.2010.533715

Zhan, Y., Tan, K. H., Ji, G., & Tseng, M. L. (2018). Sustainable Chinese manufacturing competitiveness in the 21st century: green and lean practices, pressure and performance. *International Journal of Computer Integrated Manufacturing*, *31*(6), 523–536. https://doi.org/10.1080/0951192X.2016.1268721

Zhixia, C., Hossen, M. M., Muzafary, S. S., & Begum, M. (2018). Green banking for environmental sustainability-present status and future agenda: Experience from Bangladesh. *Asian Economic and Financial Review*, *8*(5), 571–585. https://doi.org/10.18488/journal.aefr.2018.85.571.585

List of Scientific Publications by the Author on the Topic of the Dissertation

Papers in Peer-Reviewed Scientific Journals

Tvaronavičienė, M., & Nassar, N. (2021a). A systematic theoretical review on sustainable management for green competitiveness. *Insights into Regional Development*, 3(2), 267–281. https://doi.org/10.9770/ird.2021.3.2(7)

Nassar, N., & Strielkowski, W. (2022). Transition towards green financial sector for gaining newly perceived competitiveness by adopting a green management model. *Insights into Regional Development*, 4(1), 71–88. https://doi.org/10.9770/ird.2022.4.1(5)

Nassar, N., & Tvaronavičienė, M. (2023). Sustainable banking : a quantitative case in the Middle East using MCDM and SEM methods. *Journal of Law and Sustainable Development, 11*(12), 1–37. https://doi.org/10.55908/sdgs.v11i12.1108

Papers in Other Editions

Tvaronavičienė, M., & Nassar, N. (2021b, May 13–14). *ICT management for green competitiveness in the banking sector* [Conference presentation]. The Conference on Business Management and Economic Engineering (CIBBME), Lithuania. https://doi.org/10.3846/cibmee.2021.587

Nassar, N., & Tvaronavičienė, M. (2019). Sustainable management for green competitiveness: A scientific review. *In* The materials of the International Scientific Conference "Social Sciences for Regional Development" (pp. 75–83). Daugavpils University.https://du.lv/wp-content/uploads/2022/11/SZF-krajums_IV_Psihologijas-aktualitates_2020_gala-versija.pdf

Summary in Lithuanian

Įvadas

Problemos formulavimas

Bankų sektoriui daromas vis didesnis spaudimas taikyti tvariojo valdymo praktikas dėl nuolat kintančių reguliavimo reikalavimų, augančių vartotojų lūkesčių dėl etiško organizacijų elgesio ir globalių tvarumo darbotvarkių, tokių kaip Darnaus vystymosi tikslai (SDGs) ir Paryžiaus susitarimas (Leheza ir kt., 2021; Drago ir kt., 2024; Ashrafi ir kt., 2020; Ritzel ir kt., 2020). Kaip finansiniai tarpininkai, bankai užima esminę poziciją finansuojant aplinkai draugiškus sektorius ir formuojant organizacijų darnaus vystymosi elgseną. Tačiau, nepaisant vis didėjančio dėmesio tvarumui, vis dar išlieka reikšminga tyrimų spraga – trūksta supratimo, kaip šios praktikos veikia suinteresuotųjų šalių sprendimų priėmimą ir bankų konkurencinį pozicionavimą (Bilan ir kt., 2019; Yadav ir kt., 2024). Egzistuojantys tyrimai dažniausiai koncentruojasi į operacinius aspektus – žaliuosius produktus, įmonių socialinę atsakomybę ar aplinkosaugos vadybos sistemas, – tačiau šie elementai dažnai nėra integruoti į platesnę strategiją, atliepiančią suinteresuotųjų šalių interesus (Galletta ir kt., 2024; Kumar & Prakash, 2020; Pu ir kt., 2024; Castagna ir kt., 2020). Be to, dauguma mokslinių šaltinių orientuoti į išsivysčiusių rinkų kontekstą, todėl stokojama įžvalgų apie besiformuojančias ekonomikas, tokias kaip Libanas, kuriose išteklių stoka ir reguliavimo reikalavimų keliami iššūkiai dar labiau apsunkina tvarių sprendimų diegimą (Rahman ir kt., 2023; Farhan ir kt., 2024). Ši disertacija remiasi prielaida, kad suinteresuotųjų šalių įtraukimas turi tapti esminiu tvarios bankininkystės principu. Jei bankai neturės struktūrizuoto modelio, atspindinčio šių šalių prioritetus,

jiems gresia strateginis nesuderinamumas, veiklos neefektyvumas ir konkurencinio pranašumo praradimas (Freeman, 1984; Drago et ir kt., 2024). Atliktame tyrime tvarumas interpretuojamas kaip strateginis, dinamiškas procesas, o siūlomas modelis orientuojamas į suinteresuotąsias šalis ir gali būti pritaikomas skirtinguose rinkų kontekstuose (Chaudhuri ir kt., 2022; Kumar & Prakash, 2020

Darbo aktualumas

Tvariojo valdymo praktikos bankininkystėje yra plačiai nagrinėjamos dėl jų teikiamos naudos, tokios kaip sąnaudų mažinimas, neigiamo poveikio aplinkai mažinimas ir geresnė reputacija. Atsižvelgiant į tai, kad bankų institucijos vis dažniau susiduria su klimato kaitos keliama rizika, reguliavimo pokyčiais ir augančiais vartotojų lūkesčiais dėl atsakingos bankininkystės, tvarumas tampa esminiu veiksniu užtikrinant ilgalaikį atsparumą bei konkurencinį išskirtinumą. Vis dėlto atliekant šiuos tyrimus tvarumo praktikos dažnai analizuojamos atskirai, neintegruojant jų į nuoseklų modelį, suderinantį tvarumo tikslus su suinteresuotųjų šalių prioritetais ir ilgalaikiu konkurencingumu. Makarchenko ir kt. (2016) bei Nevárez ir Féliz (2019) analizuoja sąnaudų mažinimo priemones, o Song ir kt. (2019) bei Kokkonen ir Ojanen (2018) pabrėžia suinteresuotųjų šalių įtraukimą, tačiau šie aspektai nėra visiškai integruoti į bendrą strateginį požiūrį. Šio tyrimo aktualumą sustiprina globalūs tvarumo reikalavimai, tokie kaip Jungtinių Tautų darnaus vystymosi tikslai (SDGs), aplinkos, socialinės atsakomybės ir valdysenos (ESG) reglamentavimas ir žaliojo finansavimo iniciatyvos, kurios keičia bankininkystės sektoriaus struktūrą. Bankai prisideda prie darnaus vystymosi 8, 9, 10, 12, 13 ir 17 tikslų įgyvendinimo skatindami finansinę įtrauktį, finansuodami tvarius projektus bei taikydami žaliąsias finansavimo strategijas. ESG principais grįsti modeliai didina bankų konkurencingumą (Galletta et al., 2024; Agnese et al., 2024), nors besivystančios rinkos vis dar susiduria su įvairiais iššūkiais (Rahman et al., 2023; Kumar & Prakash, 2020). Šiame tyrime siūlomas teorijomis pagrįstas, kontekstui jautrus modelis, susiejantis tvarumą su sprendimų priėmimu bei ilgalaikiu pelningumu.

Tyrimo objektas

Darbo tyrimo objektas – tvariojo valdymo praktikos ir jų vaidmuo formuojant žaliąjį konkurencingumą bei suinteresuotųjų šalių sprendimų priėmimą bankų sektoriuje.

Disertacijos tikslas

Šios disertacijos tikslas – sukurti ir validuoti kompleksinį modelį, skirtą vertinti tvariojo valdymo praktikoms bankų sektoriuje, daugiausia dėmesio skiriant jų poveikiui suinteresuotųjų šalių sprendimų priėmimui ir žaliojo konkurencingumo formavimui.

Disertacijos uždaviniai

Siekiant pasiekti diseracijos tikslą, disertacijoje sprendžiami šie uždaviniai:

1. Atlikti esamos mokslinės literatūros analizę tvariojo valdymo ir žaliojo konkurencingumo tematika bankų sektoriuje, siekiant nustatyti mokslinių tyrimų spragas bei pagrindines tvariojo valdymo praktikas, darančias įtaką sprendimų priėmimui ir konkurencingumui, ir sukurti teorinį pagrindą, apimantį konceptualias prielaidas ir hipotetinius elementus, skirtus modeliui validuoti.

2. Pasitelkiant kiekybinius tyrimo metodus, įvertinti ryšius tarp tvariojo valdymo praktikų ir suinteresuotųjų šalių sprendimų priėmimo bankų sektoriuje, parenkant konkrečius metodus pagal jų atitiktį tyrimo uždaviniams ir metodologiniams reikalavimams.
3. Išbandyti ir validuoti sukurtą modelį taikant empirinius tyrimus ir atvejų analizės metodą, pateikiant praktines rekomendacijas bankams dėl tvarumo strategijų gerinimo ir konkurencinės padėties stiprinimo.

Tyrimo metodika

Šioje disertacijoje taikoma pozityvistinė filosofinė orientacija (Susan Rose & Nigel Spinks, 2024), pagrįsta objektyvistine epistemologija ir realistine ontologija. Tyrime taikomas dedukcinis tyrimo metodas, siekiant plėtoti ir tikrinti nusistovėjusias vadybos teorijas – būtent suinteresuotųjų šalių teoriją (Freeman, 1984), išteklių pagrįstą požiūrį (Barney, 1991), institucinę teoriją (DiMaggio & Powell, 1983) ir dinamiškų gebėjimų teoriją (Teece ir kt., 1997) – Libano bankininkystės sektoriaus kontekste. Pirmame skyriuje pateikiamas tvaraus valdymo ir žaliojo konkurencingumo teorinis pagrindas, paremtas struktūrizuota mokslinės literatūros apžvalga ir lyginamąja analize (Bilan ir kt., 2019; Kumar & Prakash, 2020). Antrame skyriuje aprašoma empirinė tyrimo metodologija. Buvo sukurtas koncepcinis modelis ir suformuluotos hipotezės, remiantis teorinėmis įžvalgomis (Drago ir kt., 2024; Yadav ir kt., 2024). Duomenys buvo surinkti naudojant struktūrizuotą klausimyną, skirtą vidiniams ir išoriniams suinteresuotiesiems asmenims. Buvo taikomi kiekybiniai metodai: struktūrinių lygčių modeliavimas (SEM), siekiant įvertinti teorinius ryšius, ir daugiakriterinis sprendimų priėmimas (MCDM), naudojant analitinės hierarchijos procesą (AHP), siekiant nustatyti tvaraus valdymo praktikų prioritetus pagal suinteresuotųjų šalių nuomones. Laikantis pozityvistinės paradigmos, kokybiniai elementai buvo naudojami tik palaikančiuoju pobūdžiu, siekiant paaiškinti kiekybinių rezultatų interpretaciją. Trečiame skyriuje pristatomas modelio validavimas ir tobulinimas, patvirtinantis, kad suinteresuotųjų šalių inicijuotas tvarumo siekis daro reikšmingą įtaką žaliajam konkurencingumui. Pasirinkta metodologija užtikrina empirinį patikimumą ir leidžia rezultatų apibendrinimą kitose besivystančiose bankininkystės aplinkose.

Darbo mokslinis naujumas

Disertacijos mokslinį naujumą lemia keturi bruožai. Pirmiausia – integruotas teorinis strateginio tvarumo pagrindas. Disertacijoje pristatomas naujas sprendimų priėmimo modelis, kuris jungia suinteresuotųjų šalių teoriją, ištekliais grindžiamą požiūrį (RBV) ir dinamiškų gebėjimų (DC) teoriją į vieningą analitinį pagrindą. Toks teorijų integravimas leidžia bankams tiesiogiai susieti tvarumo principus su konkurencine strategija, paverčiant žaliąsias iniciatyvas iš atitikties užtikrinimo priemonių į aktyvius ilgalaikio finansinio ir aplinkosauginio veiklos efektyvumo veiksnius.

Antra – kiekybiškai pagrįstas suinteresuotųjų šalių prioritetų nustatymo modelis. Tyrimas praplečia suinteresuotųjų šalių teorijos taikymą, pateikdamas struktūruotą, duomenimis pagrįstą metodiką, skirtą vertinti konkrečių suinteresuotųjų grupių tvarumo prioritetams. Šis požiūris leidžia peržengti tradicinių modelių ribas, aiškiai atskiriant vidinių ir

išorinių suinteresuotųjų šalių įtaką bei suteikiant kiekybinį pagrindą tvarumo strategijoms derinti su suinteresuotųjų šalių lūkesčiais.

Trečia – tvarumas kaip operacionalizuotas strateginis išteklius. Tyrimas atskleidžia, kaip vidiniai suinteresuotieji asmenys – ypač darbuotojai ir vadovybė – daro reikšmingą poveikį tvariųjų praktikų diegimui. Tokiu būdu papildomos RBV ir DC teorijos, o tvarumas įtvirtinamas kaip apčiuopiamas, lankstus ir prisitaikantis strateginis išteklius, stiprinantis žaliąjį konkurencingumą ir palaikantis nuolatinę inovaciją, ypač bankininkystės sektoriuose, kuriuose riboti ištekliai.

Ketvirta – empiriškai patvirtintas modelis, pritaikytas konkrečiai rinkai. Disertacijoje teorija sujungiama su praktika taikant modelį Libano bankininkystės sektoriuje ir parodant jo platesnį pritaikomumą. Atlikus empirinį pagrindimą, pateikiamas pakartotinai taikomas modelis, kuris leidžia bankams integruoti tvarumo principus į sprendimų priėmimo procesus, prisitaikant prie reguliavimo reikalavimų, institucinės aplinkos ir suinteresuotųjų šalių dinamikos tiek besivystančiose, tiek išsivysčiusiose rinkose.

Darbo rezultatų praktinė reikšmė

Šiame darbe pristatytos praktinės įžvalgos reikšmingai prisideda prie tvariosios bankininkystės praktikos stiprinimo.

Pirma – pateikiamas struktūruotas ir lengvai pritaikomas tvarumo sprendimų priėmimo modelis: disertacijoje finansų institucijoms siūlomas aiškiai apibrėžtas, duomenimis grįstas modelis, skirtas tvarumo principams integruoti į pagrindinius strateginius ir operacinius sprendimus. Šis modelis suteikia galimybę bankams tvarumo iniciatyvas suderinti su verslo tikslais, teisės aktais ir konkurencine aplinka. Jo lankstumas leidžia jį efektyviai taikyti tiek besivystančiose, tiek išsivysčiusiose finansų rinkose, todėl jis tampa vertingu sprendimų priėmimo įrankiu skirtinguose institucinės aplinkos kontekstuose.

Antra – suinteresuotųjų šalių pagrindu sukurtas tvarumo prioritetų nustatymo įrankis: tyrimas pateikia praktinį mechanizmą, padedantį bankams vertinti ir nustatyti suinteresuotųjų šalių lūkesčių svarbą tvarumo srityje. Atskirai analizuojant vidinių ir išorinių suinteresuotųjų grupių – darbuotojų, klientų, MVĮ, stambiųjų korporatyvinių klientų ir tiekėjų – įtaką, šis įrankis leidžia kurti kryptingas, aktualias ir įtraukiančias tvarumo strategijas. Tai apima tokius sprendimus kaip žalieji produktai mažmeniniams klientams, ESG principais grįsti instrumentai verslo segmentui ir darbuotojų inicijuotos tvarumo veiklos.

Trečia – atliekamas strateginis išteklių paskirstymas siekiant konkurencinio tvarumo: modelis leidžia bankams vertinti tvarumą kaip strateginį išteklių, susiejant suinteresuotųjų šalių įžvalgas su finansiniu pagrįstumu ir poveikiu aplinkosaugai. Tokiu būdu institucijos gali efektyviai nukreipti išteklius į tas tvarumo iniciatyvas, kurios pasižymi didžiausia verte – ypač rizikos mažinimo, inovacijų skatinimo ir konkurencinio pranašumo užtikrinimo srityse. Šis aspektas itin svarbus veiklos aplinkoje, kuriai būdingi riboti ištekliai ir reguliavimo neapibrėžtumas.

Ketvirta – sudaroma galimybė pritaikyti modelį besivystančių rinkų kontekste ir tarptautiniu mastu: empiriniai tyrimo rezultatai Libano bankininkystės sektoriuje parodė modelio veiksmingumą sprendžiant tokias iššūkių kupinas situacijas kaip reguliavimo

reikalavimų neapibrėžtumas, riboti ištekliai ir silpnas suinteresuotųjų šalių įsitraukimas. Kartu dėl savo struktūruotos ir kiekybiškai pagrįstos metodikos šis modelis gali būti lengvai perkeltas į išsivysčiusių rinkų sąlygas, suteikiant bankams universalią, pakartotinai taikomą metodologiją, skirtą tvarumui integruoti į ilgalaikę verslo strategiją skirtinguose institucinės veiklos kontekstuose.

Ginamieji teiginiai

Disertacijoje ginami šie teiginiai:

1. Tvariojo valdymo praktikos turi teigiamą poveikį bankų suinteresuotųjų šalių sprendimų priėmimui ir stiprina darnaus konkurencingumo lygį bankų sektoriuje.
2. Į suinteresuotųjų šalių poreikius orientuotas požiūris į tvarųjį valdymą sudaro galimybę bankams kurti tikslines valdymo strategijas, kurios pagerina tvarumo rezultatus ir suteikia konkurencinį pranašumą.
3. Tvariųjų produktų valdymas ir aplinkosaugos valdymas yra esminiai veiksniai, skatinantys bankų suinteresuotųjų šalių sprendimus, susijusius su tvarumu.
4. SEM ir MCDM-AHP metodikų integravimas suteikia patikimą pagrindą vertinti ir nustatyti tvarumo kriterijų prioritetus bankų sektoriuje.

Darbo rezultatų aprobavimas

Disertacijos tematika buvo publikuoti penki moksliniai straipsniai, kuriuose nagrinėjamos tvariojo valdymo ir darnaus konkurencingumo temos bankų sektoriuje. Šie straipsniai buvo publikuoti tarptautiniu mastu pripažintuose moksliniuose žurnaluose ir konferencijų leidiniuose. Be to, tyrimo rezultatai buvo pristatyti aštuoniose tarptautinėse konferencijose ir moksliniuose seminaruose – trijose Lietuvoje ir penkiose užsienyje:

- Tarptautinė konferencija „Idėjų kalvė 2019“, Lietuvos jaunųjų mokslininkų sąjunga, Kelmė, Lietuva, 2019 m.
- Tarptautinė konferencija „Scientific Conference on Economics and Entrepreneurship (SCEE’2019)“, Rygos technikos universitetas, Latvija, 2019 m.
- Tarptautinė konferencija „14-oji Tarptautinė socialinių mokslų fakulteto mokslinė konferencija“, Daugpilio universitetas, Latvija, 2021 m.
- Tarptautinė konferencija „Contemporary Issues in Business, Management, and Economics Engineering“, Vilniaus TECH universitetas, Lietuva, 2021 m.
- Tarptautinė konferencija „1-oji Tarptautinė mokslinė-praktinė internetinė konferencija“, Dnipro, Ukraina, 2021 m.
- Mokslinis seminaras Amerikos kultūros ir švietimo universitete (AUCE), Tiro filialas, Libanas, 2023 m.
- Tarptautinė konferencija „Middle East International Conference on Contemporary Scientific Studies-VIII“, IKSAD institutas, Adana, Turkija, 2023 m.
- Tarptautinė konferencija „Business and Management 2023“, Vilniaus Gedimino technikos universitetas, Lietuva, 2023 m.
- Mokslinis seminaras Humanitarinių ir socialinių mokslų institute, Daugpilio universitetas, Latvija, 2024 m.

Disertacijos struktūra

Disertaciją sudaro šios dalys: įvadas, trys skyriai (pirmas skyrius – literatūros apžvalga; antras skyrius – tyrimas; trečias skyrius – siūlomas modelis), bendrosios išvados, literatūros sąrašas, disertacijos tematikai skirtų autoriaus publikacijų ir pranešimų sąrašas, santrauka lietuvių kalba bei priedai. Bendra daktaro disertacijos apimtis – 177 puslapiai, neskaitant priedų. Disertacijoje pateikta 10 sunumeruotų formulių, 25 lentelės ir 8 paveikslai.

1. Tvaraus valdymo literatūros apžvalga siekiant tarptautinės plėtros žaliojo konkurencingumo

Tvarusis valdymas, kuriuo yra siekiama darnaus konkurencingumo bankų sektoriuje, apibrėžiamas kaip strateginis požiūris, integruojantis aplinkosauginį tvarumą į pagrindinę bankų veiklą ir įtraukiantis suinteresuotųjų šalių vertybes į jo strategijas. Šis požiūris pabrėžia svarbų suinteresuotųjų šalių, įskaitant darbuotojus, klientus ir valdybos narius, vaidmenį formuojant banko tvarumo praktikas. Bankų veikloje tvarusis valdymas vis dažniau tampa prioritetu. Tačiau, nepaisant to, išlieka žinių spragų dėl nepakankamo tvariojo valdymo poveikio vertinimo suinteresuotųjų šalių sprendimų priėmimo procesams ir konkurencinei pozicijai, ypač besivystančiose rinkose, tokiose kaip Libanas. Dauguma esamų tyrimų yra orientuoti į atskirus tvariojo valdymo aspektus, tokius kaip įmonių socialinė atsakomybė ar ekologinės iniciatyvos, tačiau trūksta kompleksinio žinių pagrindo, kuris apimtų šių veiksmų ir įvairių suinteresuotųjų šalių poreikių derinimą. Išsamiai analizuojamos tvariosios bankininkystės praktikos išsivysčiusiose rinkose, tačiau stokojama tyrimų, kuriuose būtų analizuojami besivystančiose ekonomikose veikiančių bankų iššūkiai. Šie iššūkiai susiję su teisiniais ir veiklos apribojimais.

Šios disertacijos tyrimu yra siekiama pašalinti minėtas žinių spragas, pasiūlant kompleksinį tvariąsias praktikas integruojantį modelį, siekiant sustiprinti darnų bankų konkurencingumą įvairiose suinteresuotųjų šalių grupėse. Modelis leidžia įtraukti aplinkosauginius, socialinius ir ekonominius veiksnius bei įvertinti, kaip jie sąveikauja bankų sektoriuje ir daro įtaką strateginiams sprendimams. Tyrimui atlikti yra pasitelkiamos teorijos: ištekliais pagrįstas požiūris (angl. *resource-based view*), rinkos teorija (angl. *market-based view*), dinaminių galimybių teorija (angl. *dynamic capabilities*) ir suinteresuotųjų šalių teorija (angl. *stakeholder theory*). Pasitelkus šias teorijas, tyrime tvarumas yra analizuojamas kaip priemonė ilgalaikiam konkurenciniam pranašumui, efektyvesnei veiklai, mažesnėms sąnaudoms ir didesniam klientų pasitikėjimui pasiekti.

Šioje disertacijoje pateikiamas nuoseklų požiūrį į darnųjį konkurencingumą. Atliktų tyrimų rezultatai leidžia sudaryti modelį, kuris padėtų bankams atitikti suinteresuotųjų šalių lūkesčius ir kartu įveikti unikalius besivystančių rinkų iššūkius.

2. Kiekybinio tyrimo metodologija, taikoma tvariam valdymui Libano bankuose

Tyrimo hipotezės

Šiame tyrime yra analizuojamas ekologiškų produktų ir paslaugų, tvariųjų platformų, tvaraus žmogiškųjų išteklių valdymo, aplinkosaugos valdymo bei tvariųjų finansų valdymo poveikis vidinių ir išorinių suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje. Tiriama, kaip šie valdymo aspektai lemia sprendimų priėmimą tarp vidinių ir išorinių suinteresuotųjų šalių bankų sektoriuje. Šiame modelyje sprendimų priėmimas (angl. *Decision Making,* toliau – DM) apima vidinių ir išorinių suinteresuotųjų šalių veiksmus; DM siejamas su trimis kriterijais remiantis tvarumo formule „Žemė–pelnas–žmonės“ (angl. *Planet-Profit-People*).

- **Pogrupis 1:** DM1 – sprendimų priėmimas, orientuotas į aplinkos apsaugą.
- **Pogrupis 2:** DM2 – sprendimų priėmimas, pagrįstas pelno aspektu.
- **Pogrupis 3:** DM3 – sprendimų priėmimas, pagrįstas reputacijos aspektu.

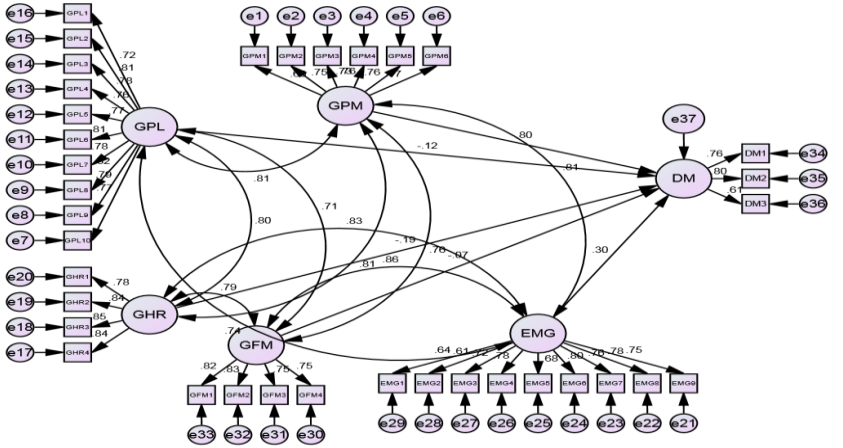
Siekiant ištirti tvariojo valdymo praktikų poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje, suformuluotos šios hipotezės:

1. **H1:** Tvariųjų produktų valdymas (angl. *Green Product Management,* toliau – GPM) turi teigiamą poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje.
2. **H2:** Tvarusis platformų valdymas (angl. *Green Platform Management,* toliau – GPL) turi teigiamą poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje.
3. **H3:** Tvarusis žmogiškųjų išteklių valdymas (angl. *Green Human Resource Management,* toliau – GHR) turi teigiamą poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje.
4. **H4:** Aplinkosaugos valdymas (angl. *Environment Management,* toliau – EMG) turi teigiamą poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje.
5. **H5:** Tvarusis finansų valdymas (angl. *Green Finance Management,* toliau – GFM) turi teigiamą poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje.
6. **H6:** Suinteresuotųjų šalių sprendimų priėmimas (vidinių ir išorinių suinteresuotųjų šalių) teigiamai veikia darnaus konkurencingumo lygį bankų sektoriuje.

Rezultatų santrauka

Tyrimo rezultatai leidžia suformuoti nuoseklų vertinimo modelio sukūrimo ir patikrinimo procesą, užtikrinant duomenų suderinamumą bei atitiktį validumo ir patikimumo standartams. Išsamios modelio vertinimo įžvalgos, apimančios tinkamumo indeksą,

standartizuotus regresijos koeficientus ir standartines paklaidas, leidžia pagerinti duomenų interpretavimą ir sudaro prielaidas geriau suprasti prognozinių veiksnių ir poveikio ryšius.



S2.1 pav. SEM–AMOS tyrimo modelis, apimantis validumo rodiklius

Tyrimo rezultatų pagrindu suformuluotos vertingos sudėtingų vertinimo modelių kūrimo gairės, skatinant griežtą analitinę praktiką ir tobulinant vertinimo metodus mokslinių tyrimų bendruomenėje.

Hipotezių testavimas (SEM)

Struktūrinių lygčių modeliavimas (angl. *Structural Equation Modeling,* sutr. SEM) yra technika, sukurta dėl esamų tradicinio mažiausių kvadratų metodo (angl. *Ordinary Least Square,* sutr. -OLS) apribojimų, ypač taikomų nagrinėjant latentinius konstruktus. Šiame tyrime hipotezės buvo testuojamos siekiant patvirtinti priežastinius ryšius tarp nepriklausomų ir priklausomų kintamųjų. Hipotezėms testuoti buvo nustatytas 5 % alfa lygmuo. Priežastingumui vertinti buvo naudojami standartizuoti koeficientai, o apskaičiavimo metodas buvo didžiausio tikėtinumo SEM (angl. *Maximum Likelihood for SEM*).

Remiantis lentelėje pateiktais regresijos koeficientais (žr. 2.10 lentelę) galima teigti, kad **GPM** (tvarių produktų valdymas) turi reikšmingą poveikį sprendimų priėmimui **(DM)**. Remiantis tyrimo rezultatais teigiama, jog **1 %** GPM padidėjimas lemtų **0,797** sprendimų priėmimo padidėjimą, esant standartinei paklaidai **0,153** ir p reikšmei **0,0000001 (<0,0001).**

Taip pat nustatyta, kad **EMG** (aplinkosaugos valdymas) turi teigiamą poveikį sprendimų priėmimui; remiantis tyrimų rezultatais galima teigti, jog **1 %** EMG padidėjimas lemtų **0,295** sprendimų priėmimo padidėjimą, esant standartinei paklaidai **0,151** ir p reikšmei **0,032 (<0,05).**

Abi hipotezės yra patvirtintos, tačiau paneigtos **GPL** (tvariųjų platformų valdymo), **GHR** (žmogiškųjų išteklių valdymo) ir **GFM** (tvariųjų finansų valdymo) poveikio sprendimų priėmimui hipotezės, kadangi p reikšmė buvo **>0,05**.

S2.1 lentelė. Regresijos koeficientai

Konstruktas	Kryptis	Konstruktas	Standartizuotas koeficientas	Standartinė paklaida	P reikšmė	Rezultatas
DM	←	GPM	0.797	0.153	0.000001***	Reikšmingas
DM	←	GPL	-0.123	0.108	0.219	Ne-reikšmingas
DM	←	GHR	-0.187	0.125	0.128	Ne-reikšmingas
DM	←	GFM	-0.070	0.125	0.561	Ne-reikšmingas
Konstruktas	Kryptis	Konstruktas	Standartizuotas koeficientas	Standartinė paklaida	P reikšmė	Rezultatas
DM	←	EMG	0.295	0.151	0.032**	Reikšmingas

***<0.0001; **<0.05

Nustatyta, jog p reikšmių eiliškumas rodo konstruktų svarbą: **GPM > EMG > GHR > GPL > GFM.**

Patvirtintos hipotezės

H1: Tvariųjų produktų valdymas (GPM) turi teigiamą poveikį suinteresuotųjų šalių sprendimų priėmimui bankų sektoriuje. Ši hipotezė yra patvirtinta remiantis GPM standartizuotu koeficientu, kuris yra 0,797, o p reikšmė yra labai maža (0,000001), rodanti reikšmingą teigiamą poveikį sprendimų priėmimui.

H4: Aplinkosaugos valdymas (EMG) teigiamai veikia suinteresuotųjų šalių sprendimų priėmimą bankų sektoriuje. Ši hipotezė yra patvirtinta remiantis standartizuotu EMG koeficientu, kuris yra 0,295, o p reikšmė 0,032 rodo reikšmingą teigiamą poveikį sprendimų priėmimui.

Tyrimo rezultatai leido nustatyti įvairių konstruktų prioritetų eiliškumą pagal jų poveikį sprendimų priėmimui:

- GPM (tvarusis produktų valdymas): reikšmingiausia įtaka.
- EMG (aplinkosaugos valdymas): poveikis taip pat reikšminga.
- GHR (tvarus žmogiškųjų išteklių valdymas), GPL (platformų valdymas) ir GFM (tvarusis finansų valdymas): šios sritys neturėjo reikšmingo poveikio sprendimų priėmimui.

Konstruktų prioritetų eiliškumas yra toks: GPM > EMG > GHR > GPL > GFM**.**

3. Eksperimentiniai tvaraus valdymo tyrimai Libano bankuose

Tyrimo rezultatų praktinė vertė

Empirinių tyrimų rezultatai leidžia pateikti bankų institucijoms vertingų žinių, nurodančių, kaip stiprinti darnųjį konkurencingumą taikant tvarųjį valdymą, akcentuojant

sprendimų priėmimą, orientuotą į suinteresuotųjų šalių poreikius, tvariųjų produktų diegimą ir strateginį išteklių paskirstymą. Empirinių tyrimų rezultatai suteikia galimybę bankams prioretizuoti suinteresuotųjų šalių poreikius, gerinti santykius ir stiprinti savo pozicijas rinkoje, derinant tvarumo ir finansinius tikslus bei teisinius reikalavimus.

Empirinių tyrimų rezultatai leido pasiūlyti lengvai pritaikomą požiūrį, kuris sudaro galimybę bankams besivystančiose rinkose diegti tarptautinius standartus, sprendžiant tokius unikalius iššūkius kaip ribota infrastruktūra ir kintantys lūkesčiai. Šios disertacijos empirinių tyrimų rezultatai yra praktinis įrankis, leidžiantis bankams efektyviai integruoti tvarumą, skatinti veiklos efektyvumą, inovacijas ir ilgalaikį pelningumą. Modelis taip pat padeda politikos formuotojams ir banko sektoriaus specialistams priimti sprendimus ir kurti tvaraus bankų sektoriaus augimą skatinančias iniciatyvas.

S3.1 lentelė. Tvariųjų aspektų svarba įvairioms suinteresuotųjų šalių grupėms

Suinteresuotųjų šalių grupė	Reitingas (vidiniai suinteresuotieji asmenys)	Reitingas (išoriniai suinteresuotieji asmenys)	Tvariųjų produktų svarba	Aplinkosaugos valdymo svarba	Tvariojo žmogiškųjų išteklių valdymo svarba	Finansinės veiklos rezultato svarba	Tvariųjų platformų valdymo svarba
Darbuotojai	1	-	Didžiausia	Vidutinė	Didelė	Maža	Maža
Valdybos nariai	2	-	Didžiausia	Vidutinė	Maža	Vidutinė	Vidutinė
Akcininkai	4	-	Didelė	Vidutinė	Maža	Didelė	Maža
Individualūs klientai	-	3	Didelė	Didelė	Vidutinė	Vidutinė	Maža
MVĮ klientai	-	5	Didelė	Vidutinė	Maža	Maža	Maža
Didelės įmonės	-	6	Didelė	Vidutinė	Maža	Maža	Maža
Tiekėjai	-	7	Maža	Vidutinė	Maža	Maža	Didelė

Empirinių tyrimų rezultatai atskleidžia įvairių kriterijų ir suinteresuotųjų šalių reikšmę tvarių sprendimų priėmimui bankų sektoriuje. Empirinių tyrimų rezultatai pasižymi svarba formuojant valdymo praktikas, skatinančias tvarumą ir prisidedančias prie darnaus konkurencingumo lygio kėlimo.

Darbuotojai, kaip įtakingiausia vidinė suinteresuotoji šalis, prioritetą teikia tvarių produktų svarbai. Kiti veiksniai pagal jų reikšmingumą yra aplinkosaugos valdymas ir tvarusis žmogiškųjų išteklių valdymas. Finansinė veikla ir tvarusis platformų valdymas šiai grupei yra mažiau svarbūs.

Valdybos nariai, užimantys antrąją vietą pagal įtaką, taip pat išskiria tvariųjų produktų svarbą. Aplinkosaugos valdymas yra vertinamas šiek tiek mažiau, o finansinė veikla pasižymi vidutine svarba. Tvarusis žmogiškųjų išteklių ir platformų valdymas šiai grupei yra mažiau reikšmingi.

Akcininkams didele svarba pasižymi tvariųjų produktų valdymas, o aplinkosaugos valdymas yra įvertintas kaip vidutiniškai svarbus. Šiai grupei itin didelę reikšmę turi finansinė veikla, o tvarusis žmogiškųjų išteklių ir platformų valdymas yra mažiau svarbūs.

Individualūs klientai, kurie yra svarbiausia išorinė suinteresuotoji šalis (bendrame vertinime užima trečią vietą), aplinkosaugos valdymui teikia tokią pat svarbą kaip ir tvariųjų produktų valdymui. Tvarusis žmogiškųjų išteklių valdymas ir finansinė veikla yra vidutiniškai svarbūs, mažesne svarba pasižymi tvarusis platformų valdymas.

Mažos ir vidutinės įmonės (MVĮ) prioritetą teikia tvariųjų produktų valdymui, po jo eina aplinkosaugos valdymas. Tvarusis žmogiškųjų išteklių valdymas ir finansinė veikla yra mažiau svarbūs. Mažiausiai reikšmingu yra laikomas tvarusis platformų valdymas.

Didelės įmonės, kaip ir MVĮ, prioritetą teikia tvariųjų produktų ir aplinkosaugos valdymui. Tvarusis žmogiškųjų išteklių valdymas ir finansinė veikla yra ne tokie reikšmingi, o tvarusis platformų valdymas – mažiausiai svarbus.

Tiekėjai santykinai mažesnę reikšmę teikia tvarių produktų valdymui, tvariajam žmogiškųjų išteklių valdymui ir finansinei veiklai. Jiems svarbesnis yra aplinkosaugos valdymas. Aukščiausią poziciją iš visų kriterijų užima tvarusis platformų valdymas.

Empirinių tyrimų rezultatai atskleidžia svarbų vidinių suinteresuotųjų šalių vaidmenį priimant tvarius sprendimus bankų sektoriuje. Tačiau pastebėta, jog reikšmingą poveikį turi taip pat ir išorinės suinteresuotosios šalys – ypač individualūs klientai. Dauguma suinteresuotųjų šalių išskiria tvariųjų produktų valdymą kaip pagrindinį prioritetą, akcentuodamos pastarojo ypatingą svarbą tvariosios bankininkystės praktikoje.

Atliekant empirinį tyrimą yra pasitelkiami AHP-MCDM ir SEM metodus. Šių metodų taikymas leidžia atlikti nuoseklią ir gilią analizę, tokiu būdu gaunamos patikimos žinios padeda suprasti ryšius tarp kriterijų ir suinteresuotųjų šalių požiūrių. Šis kompleksinis požiūris leidžia efektyviai identifikuoti svarbiausius veiksnius, reikalingus siekiant sustiprinti darnų konkurencingumą bankų sektoriuje, reikšmingai prisidedant prie tvariojo valdymo praktikų tobulinimo.

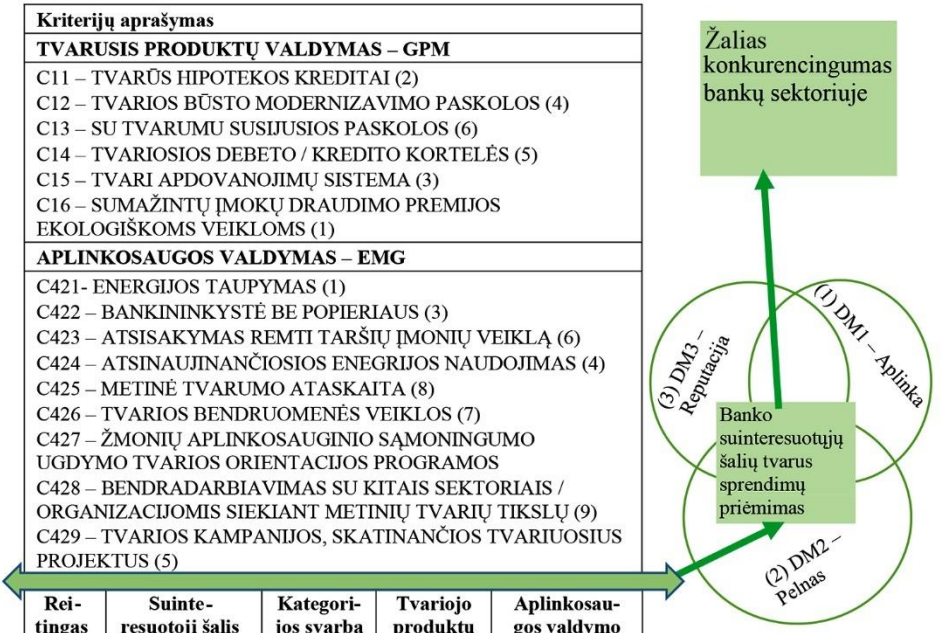
Tvarių sprendimų priėmimo prioritetų nustatymo įrankis bankams

Bankai gali stiprinti darnaus konkurencingumo lygį ir atliepti savo veikloje suinteresuotųjų šalių lūkesčius, taikydami kompleksinį tvariųjų produktų valdymo (GPM) ir aplinkosaugos valdymo (EMG) modelį, kaip vaizduojama „Tvarių sprendimų priėmimo prioritetų nustatymo įrankyje bankams“ (2 pav.). Šis valdymo įrankis padeda bankams nustatyti tvariųjų praktikų prioritetus, atsižvelgiant į suinteresuotųjų šalių svarbą ir sutelkiant dėmesį į tvariųjų produktų ir aplinkosaugos valdymą (GPM ir EMG).

GPM skatina tvarų banko sektoriaus institucijų produktų sukūrimą, tokiu būdu stiprinant vidinę tvarumo atsakomybę. O taikant EMG siekiama mažinti poveikį aplinkai, įgyvendinant tokias iniciatyvas kaip atliekų tvarkymas ir energijos efektyvumo didinimas. Tai leidžia pagerinti atitiktį teisiniams reikalavimams ir kartu reputaciją.

Remiantis struktūruotu tvarumo planu, pirmiausia reikia sukurti Tvarumo komitetą, atlikti vertinimą ir suformuluoti SMART tikslus GPM (tvariajam produktų valdymui) ir EMG (aplinkosaugos valdymui). Suinteresuotųjų šalių prioritetų nustatymas leidžia bankams efektyviai nukreipti tvarumo iniciatyvas.

Kriterijų aprašymas
TVARUSIS PRODUKTŲ VALDYMAS – GPM
C11 – TVARŪS HIPOTEKOS KREDITAI (2) C12 – TVARIOS BŪSTO MODERNIZAVIMO PASKOLOS (4) C13 – SU TVARUMU SUSIJUSIOS PASKOLOS (6) C14 – TVARIOSIOS DEBETO / KREDITO KORTELĖS (5) C15 – TVARI APDOVANOJIMŲ SISTEMA (3) C16 – SUMAŽINTŲ ĮMOKŲ DRAUDIMO PREMIJOS EKOLOGIŠKOMS VEIKLOMS (1)
APLINKOSAUGOS VALDYMAS – EMG
C421- ENERGIJOS TAUPYMAS (1) C422 – BANKININKYSTĖ BE POPIERIAUS (3) C423 – ATSISAKYMAS REMTI TARŠIŲ ĮMONIŲ VEIKLĄ (6) C424 – ATSINAUJINANČIOSIOS ENEGRIJOS NAUDOJIMAS (4) C425 – METINĖ TVARUMO ATASKAITA (8) C426 – TVARIOS BENDRUOMENĖS VEIKLOS (7) C427 – ŽMONIŲ APLINKOSAUGINIO SĄMONINGUMO UGDYMO TVARIOS ORIENTACIJOS PROGRAMOS C428 – BENDRADARBIAVIMAS SU KITAIS SEKTORIAIS / ORGANIZACIJOMIS SIEKIANT METINIŲ TVARIŲ TIKSLŲ (9) C429 – TVARIOS KAMPANIJOS, SKATINANČIOS TVARIUOSIUS PROJEKTUS (5)



Reitingas	Suinteresuotoji šalis	Kategorijos svarba	Tvariojo produktų valdymo svarba	Aplinkosaugos valdymo svarba
A1	Darbuotojai	Numeris 1	1 (Labai didelė)	2 (Didelė)
A2	Akcininkai	Numeris 4	1 (Labai didelė)	2 (Didelė)
A3	Valdybos nariai	Numeris 2	1 (Labai didelė)	4 (Vidutinė)
A4	Individualūs klientai	Numeris 3	3 (Vidutinė)	1 (Labai didelė)
A5	MVĮ	Numeris 5	1 (Labai didelė)	2 (Didelė)
A6	Didelės įmonės	Numeris 6	1 (Labai didelė)	2 (Didelė)
A7	Tiekėjai	Numeris 7	5 (Maža)	3 (Vidutinė)

S3.1 pav. Tvarių sprendimų priėmimo prioritetų nustatymo įrankis bankams: integralus požiūris, paremtas patvirtintomis hipotezėmis

Veiklos integravimas operaciniu lygmeniu pasižymi tvariųjų banko produktų sukūrimu, energijos efektyvumo skatinimu ir klientų įtraukimu rengiant sąmoningumo didinimo kampanijas. Bendradarbiavimas su tiekėjais ir tvariųjų iniciatyvų veiklos, skirtos bendruomenei, leidžia dar labiau sustiprinti tvarumo pastangas. Reguliarus stebėjimas, panaudojant pagrindinius veiklos rodiklius (angl. *key performance indicators,* sutr. KPI), ir tobulinimo priemonių taikymas leidžia užtikrinti atskaitomybę ir sudaryti galimybę prisitaikyti ir vystytis tvariojo valdymo praktikoms. Modelis leidžia pozicionuoti bankus kaip tvarios finansų srities lyderius, skatinant ilgalaikį atsparumą, geresnius santykius su

suinteresuotosiomis šalimis ir atsakomybę aplinkosaugos srityje konkurencingoje, tvarioje ir sąmoningoje rinkoje.

Bendrosios išvados

Šioje disertacijoje buvo nagrinėjamas tvariojo valdymo vaidmuo bankų sektoriuje, ypatingą dėmesį skiriant suinteresuotųjų šalių sprendimų priėmimo ir darnaus konkurencingumo stiprinimo klausimams. Kiekvienas disertacijos skyrius prisidėjo prie visapusiško teorinio ir praktinio tvarumo supratimo formavimo bei strateginių sprendimų pagrindimo.

1. Atlikta mokslinės literatūros analizė atskleidė, kad tvariojo valdymo praktikos bankų sektoriuje dažnai nagrinėjamos fragmentiškai – pavyzdžiui, kaip įmonių socialinė atsakomybė (CSR) ar aplinkosaugos iniciatyvos, – tačiau retai integruojamos į nuoseklią, suinteresuotųjų šalių poreikiais grįstą strategiją. Dauguma esamų tyrimų yra orientuoti į išsivysčiusias rinkas, nepakankamai įvertinant besivystančių ekonomikų, tokių kaip Libanas, iššūkius – ypač susijusius su ribotais ištekliais ir fragmentuota reguliavimo aplinka. Siekiant pašalinti šias spragas, buvo suformuotas kompleksinis teorinis pagrindas, integruojant suinteresuotųjų šalių teoriją, išteklių pagrindu grindžiamą požiūrį (RBV), rinkos pagrindu grindžiamą požiūrį (MBV) ir dinamiškų gebėjimų teoriją. Ši teorijų sintezė sudarė sąlygas vystyti holistinį tvarumo kaip strateginio, konkurencinio ir į suinteresuotąsias šalis orientuoto ištekliaus suvokimą.
2. Siekiant įvertinti ryšį tarp tvarumo praktikų ir suinteresuotųjų šalių sprendimų priėmimo, buvo taikytas struktūrinių lygčių modeliavimas (SEM) hipotezėms patvirtinti ir pagrindinių kintamųjų ryšių analizei atlikti. Lygiagrečiai buvo naudotas Analitinės hierarchijos metodas (AHP), taikomas daugiakriterinio sprendimų priėmimo sistemoje (MCDM), siekiant nustatyti tvariojo valdymo praktikų prioritetus, remiantis skirtingų suinteresuotųjų šalių grupių svarbos vertinimu. Ši metodologinė kombinacija sudarė objektyvaus ir duomenimis pagrįsto tiek vidinių (darbuotojų, valdybos narių, akcininkų), tiek išorinių (klientų, MVĮ, tiekėjų) suinteresuotųjų šalių preferencijų įvertinimo ir jų poveikio tvarumo prioritetų formavimui bankinėse institucijose sąlygas.
3. Atlikti tyrimo rezultatai patvirtina, kad į suinteresuotąsias šalis orientuotos tvarumo praktikos – ypač žaliųjų produktų valdymas ir aplinkosaugos vadyba – daro reikšmingą poveikį sprendimų priėmimui ir žaliajam konkurencingumui. Vidinės suinteresuotosios šalys prioritetą teikia operacinėms iniciatyvoms, o išorinės – paslaugų kokybei ir aplinkosauginei atsakomybei. Remiantis gautomis įžvalgomis, disertacijoje suformuluotos praktinės rekomendacijos, kurios gali padėti bankams tiek besivystančiose, tiek išsivysčiusiose rinkose kurti tikslines tvarumo strategijas, efektyviai paskirstyti išteklius ir suderinti veiklą su ESG lūkesčiais bei suinteresuotųjų šalių poreikiais. Patvirtintas modelis leidžia transformuoti tvarumą iš atitikties reikalavimų į strateginį išteklių, kuris remia ilgalaikį finansinį veiklos efektyvumą, didina pasitikėjimą institucijomis ir stiprina konkurencinį pranašumą.

Annexes

Annex A. General information about the experts
Annex B. Survey questions
Annex C. Survey results

Annex A. General Information About the Experts

Table A1. General information about the experts

General info about the experts				
No	Name	Years of experience	Field	Academic degree
Exp 1	DR MARWAN AL CHAB	32	Banking and Finance	PhD in finance
Exp 2	DR CAMILLE MOUSSA	30	Banking and Finance	PhD in business administration
Exp 3	DR JAMAL MUSLIMANI	20	Business administration - innovation and it	PhD in business administration
Exp4	DR RIMA SALEH	29	Banking sector	PhD in OB & HRM in business administration
Exp5	DR SAJIDA OTHMAN	13	Banking sector - academic and market research	DBA in business administration
Exp6	DR ADEL THAMINE	30	Banking and Finance	PhD in business administration
Exp7	DR ALI HARB	20	Business administration	PhD in business administration
Exp8	DR NISREEN FARAJ	25	Business administration and finance	PhD in finance
Exp9	DR ALI FARHAT	25	Finance and it	PhD in business administration and it
Exp10	DR OUSSAMA ZAHWI	30	Finance and business administration	PhD in business administration and finance

Annex B. Survey Questions

1. Respondent's Demographics

Description

1. Age
   Mark only one oval.

- 18 and < 25
- 25 and < 35
- 35 and < 45
- 45

2. Gender
   Mark only one oval.

- Female
- Male

3. Education
   Mark only one oval.

- Bachelor
- Master or equivalent
- Other

4. Job position
   Mark only one oval.

- Junior level
- Middle level
- Senior level
- Upper management

5. Years of overall work experience
   Mark only one oval.

- < 2
- ≥ 2 and < 5

- ≥ 5 and < 10
- 10

6. Years of experience in financial companies (e.g., banks)
   Mark only one oval.

- None
- < 2
- ≥ 2 and < 5
- ≥ 5 and < 10
- 10

7. Name the financial company or companies (e.g., bank) that you have worked in (if applicable)
   Short answer text
8. Have you ever dealt with banks?
   Mark only one oval.

- Yes
- No

9. What is the name of the bank you mostly deal with?
   Short answer text
10. The bank's headquarters country you deal with is:
    Mark only one oval.

- Lebanon
- Outside Lebanon
- None. I don't deal with banks

11. Does the bank you mostly deal with have other branches outside Lebanon?
    Mark only one oval.

- Yes
- No
- Not applicable. The bank I deal with is not in Lebanon.

12. Does the bank you deal with apply Green Management?
    Mark only one oval.

- Yes
- No
- Not applicable (never dealt with banks)

13. What type of bank stakeholder are you?
Mark only one oval.

- A1: Employee
- A2: Shareholder
- A3: Board of Director
- A4: Individual Client
- A5: SME – Small to Medium Enterprise (client)
- A6: Big Corporate (client)
- A7: Supplier for the bank
- You never dealt with banks

2. Survey Part

For the below questions, choose from 1 to 5 the answer that you think fits you.

In this survey, 1 is the lowest, and 5 is the highest.

15- **DM1** – Your decision-making to deal with a green bank is based on your interest in supporting the environment.

16- **DM2** – Your decision-making to deal with a green bank is based on your belief that investing in a green bank is profitable.

14- **DM3** – If you knew your bank has a bad green reputation because of supporting polluting businesses or not taking any important steps to protect the environment, would you transfer your banking account to a greener bank?
Mark only one oval.

15- **GPM1** – You consider that your bank should apply green mortgage management that offers low-interest rates by respecting green building standards.

16- **GPM2** – You consider that your bank should manage green home modernization loans by offering a lower interest rate for people who intend to make energy-saving renovations.

17- **GPM3** – You consider that sustainable management linked to loans with low interest is essential to push people to achieve a set of pre-established green goals.

18- **GPM4** – Due to the existence of sustainable management of green banking products, you prefer buying a credit card made of recycled plastic or bio-plastic instead of a plastic card.

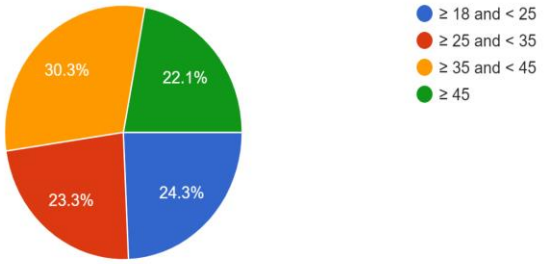
19- **GPM5** – Due to the sustainable management of green reward systems, you might redeem your accumulated golden points in your banking account with environment-friendly gifts.
20- **GPM6** – You agree to benefit from the management of insurance premiums for eco-friendly actions, such as low-charge insurance if utilizing used or recycled parts when repairing damaged cars.
21- **GPL1** – You consider digital banking to be a must when you deal with your bank as part of the bank's green platform management.
22- **GPL2** – You agree that your bank must have ICT skills management (skills in information and communications technology) to use and comprehend a variety of technological software.
23- **GPL3** – You agree that intranet, call center, and electronic fund transfer are all examples of ICT capabilities that your bank should manage.
24- **GPL4** – The bank you deal with should do the best FinTech management by making its apps convenient for paying bills, transferring funds, or handling other financial tasks.
25- **GPL5** – Robotic process automation (RPA), ATM location features, and bill payment alerts are all R&D green innovative activities that should be managed by the bank you deal with.
26- **GPL6** – The bank you deal with should manage the mobile/SMS banking service to notify and efficiently alert all its clients.
27- **GPL7** – Your bank should manage its online payment gateway services as POS (point of sale) because it is crucial for businesses and customers to complete their transactions.
28- **GPL8** – Express cash system management, which is the management of any cash withdrawals made using the card and PIN on an ATM, is essential to be executed by the bank you deal with.
29- **GPL9** – The bank you deal with should ensure having secure and strong SWIFT system management.
Note that SWIFT is: the Society for Worldwide Interbank Financial Telecommunication.
30- **GPL10** – The bank you deal with should have technical assistance (TA) management, which is the management of banking mode support because it facilitates the preparation, financing, and execution of projects and programs.
31- **GHR1** – Green human skills management by providing green awareness for the staff of the bank you deal with is essential.
32- **GHR2** – The green training should be managed by the banks you deal with, by providing the staff with working methods to ensure adequate resource utilization, conserve energy, and save the environment.

33- **GHR3** – Hiring people who identify the EMS (environmental management system) should be done by the bank you deal with as per its green human capabilities management.
34- **GHR4** – Green expertise management helps the bank you deal with in their transformational efforts to become greener because they are specialized in a quality environment and sustainable development.
35- **EMG1** – Your bank should use LED lighting as part of its energy-saving management.
36- **EMG2** – You agree not to take a receipt after executing the banking transaction, as per the banking paperless management.
37- **EMG3** – It is a necessity for the bank you deal with to refuse to support polluting businesses as per its environmental management.
38- **EMG4** – Renewable energy sources management (e.g., solar and wind energy) is essential in the bank you deal with.
39- **EMG5** – You are interested in reading the green annual report published by the bank you deal with, detecting its green activities and ensuring the application of green sustainable management.
40- **EMG6** – The bank you deal with should apply the management of green community activities to support the environment and acquire an eco-friendly reputation.
41- **EMG7** – People's green awareness management via green orientation programs during events such as the FIFA World Cup or marathon is essential to exist in the bank you deal with.
42- **EMG8** – The collaboration management between the bank you deal with and other sectors or organizations for achieving green yearly goals is important.
43- **EMG9** – Green campaign management, such as green ads on the bank platform or ads inside the bank, green TV ads, green displays, and green slogans, are all forms of environmental management that are essential in the bank you deal with.
44- The bank you deal with should invest in startups and venture firms that develop green and climate-smart technologies as part of its green venture capital management.
45- **GFM2** – The bank you deal with should invest in funds dedicated to financing green projects as part of its green private equity funds management.
46- **GFM3** – As part of green brokerage management, it is essential that the bank you deal with buys and sells green bonds on the client's behalf, which promotes green investments.
47- **GFM4** – The issuance of a debt security to finance or refinance initiatives that have a positive impact on the environment is essential as part of green bond management in the bank you deal with.

Annex C. Survey Results

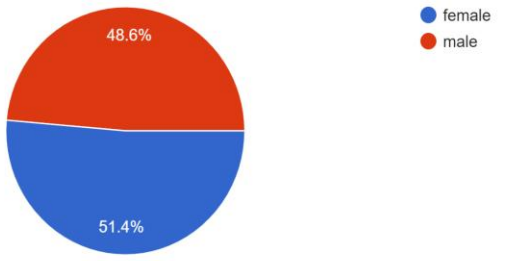
1- Age Mark only one oval.

403 responses



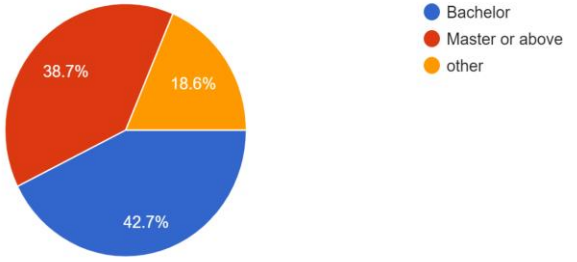
2- Gender Mark only one oval.

403 responses



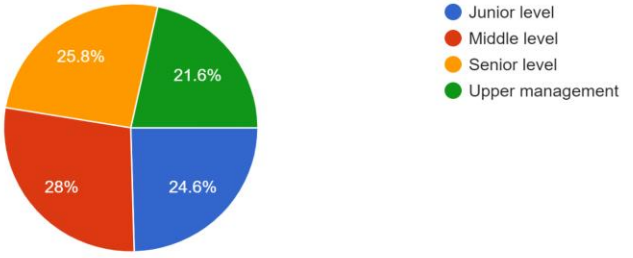
3- Education Mark only one oval.

403 responses



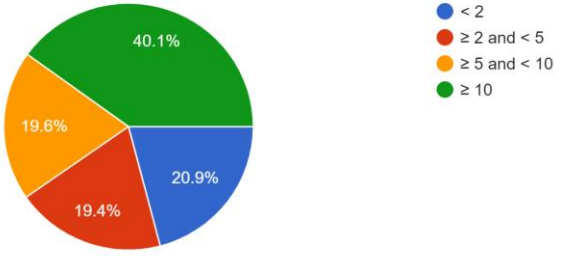
4- Job position Mark only one oval.

403 responses



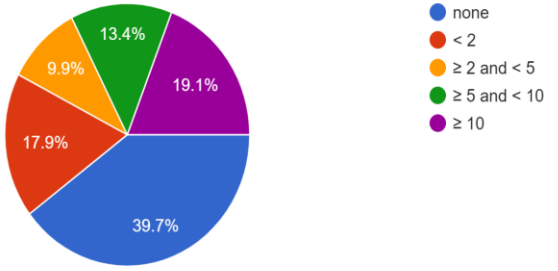
5- Years of your overall work experience سنوات خبرتك العملية الشاملة Mark only one oval.

397 responses



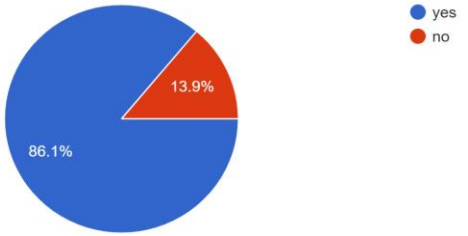
6- Years of experience in financial companies (ex: banks) سنوات الخبرة في الشركات المالية (مثل: البنوك) Mark only one oval.

403 responses



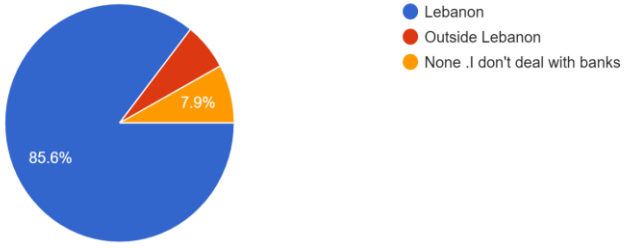
8- Have you ever dealt with banks ? هل تعاملت يوما مع البنوك؟ Mark only one oval.

403 responses



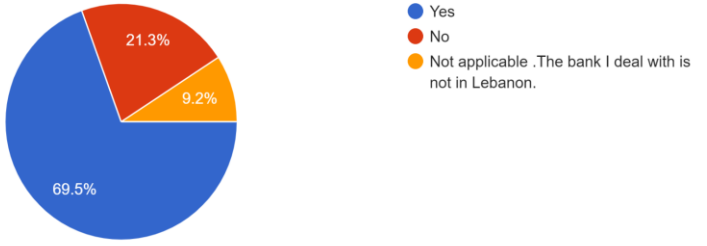
10- The bank's headquarter country you deal with is: بلد المقر الرئيسي للبنك الذي تتعامل معه هو: Mark only one oval.

403 responses



11 - Does the bank you mostly deal with has other branches outside Lebanon? هل للبنك الذي تتعامل معه في الغالب فروع أخرى خارج لبنان؟ Mark only one oval.

403 responses

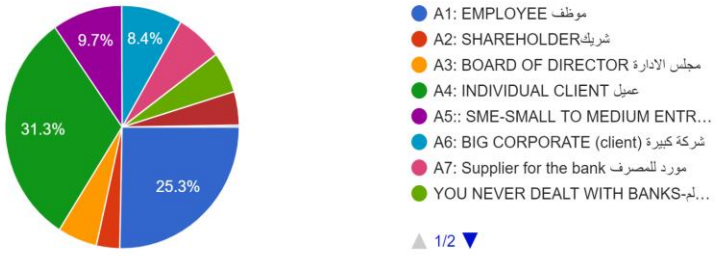


12- Does the bank you deal with apply Green Management ? هل البنك الذي تتعامل معه يطبق الإدارة الخضراء؟ Mark only one oval.

403 responses

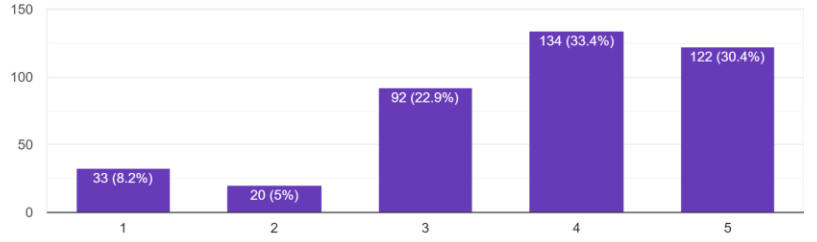
13- What type of bank stakeholder are you ? اي نوع من المساهمين انت ؟ Mark only one oval.

403 responses

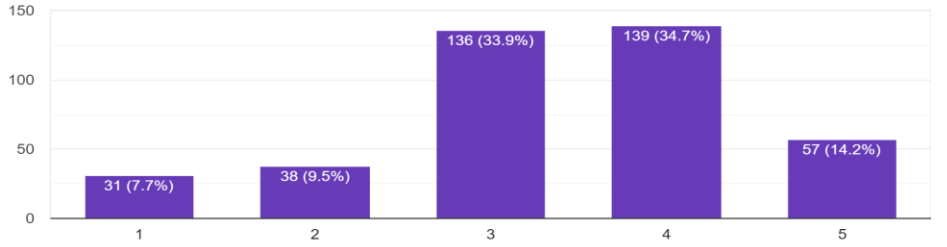


15- DM1- Your decision making to deal with a green bank is based on your interest to supporting the environment. اهتمامك بحماية البيئة يدفعك للتعامل مع مصرف يطبق السياسة الخضراء

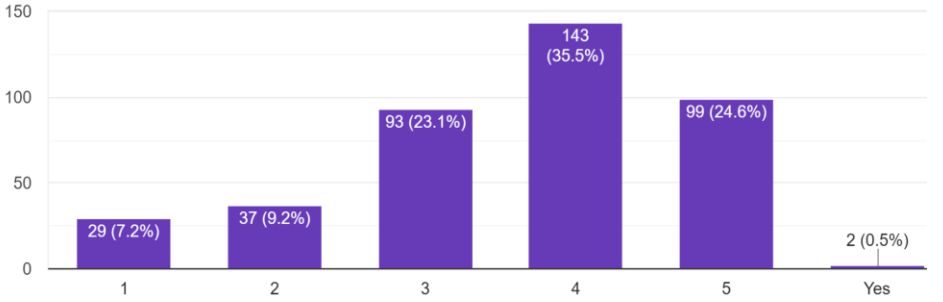
401 responses



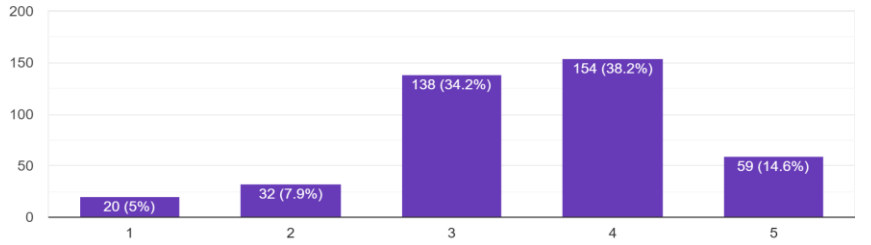
16-DM2- Your decision making to deal with a green bank is based on your believes that investing in a green bank is profitable. يعتمد اتخاذ قرارك بالتعامل مع بنك أخضر على إيمانك بأن الاستثمار في بنك أخضر أمر مربح
401 responses



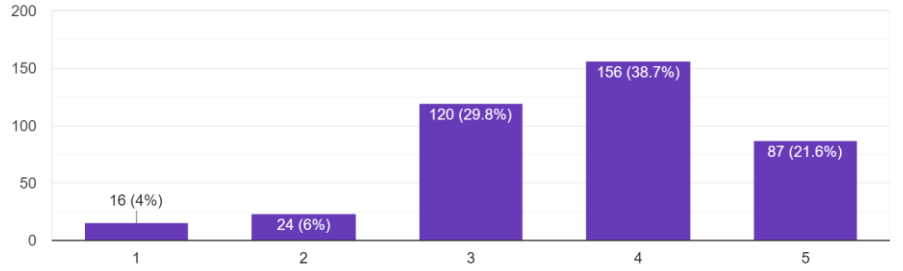
14- DM3-If you knew your bank has bad green reputation because of supporting polluting businesses or not taking any important step to protect ...لمصرفي إلى بنك أكثر صداقة للبيئة؟ Mark only one oval.
403 responses



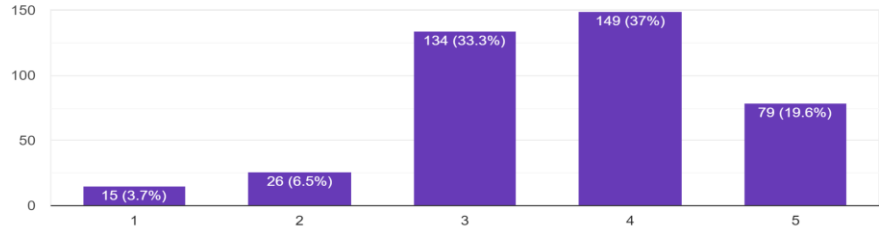
15- GPM1- You consider that your bank should apply green mortgage management that offers low interest rates by respecting the green building standards....لات فائدة منخفضة من خلال احترام معايير المباني الخضراء.
403 responses



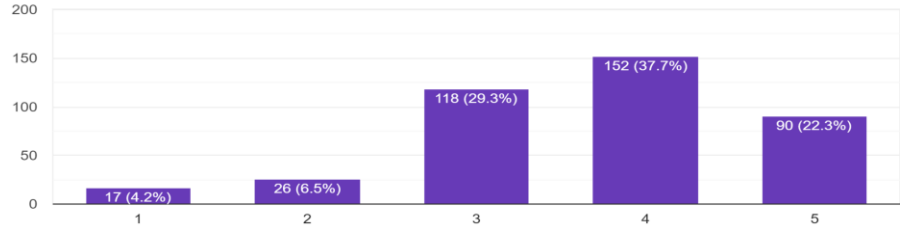
16- GPM2- You consider that your bank should Manage green home modernization loans by offering a lower interest for people who intend to make energy sav...ة أقل للأشخاص الذين يعتزمون إجراء تجديدات لتوفير الطاقة.
403 responses



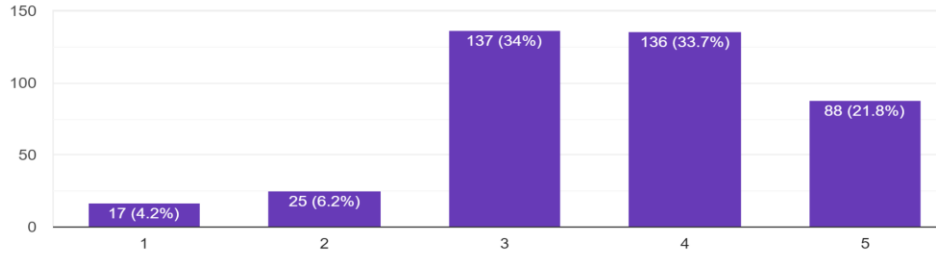
17- GPM3- You consider that Sustainable management linked to loans with low interest is essential to push people achieving a set of preestablished green g...الناس إلى تحقيق مجموعة من الأهداف الخضراء المحددة مسبقًا
403 responses



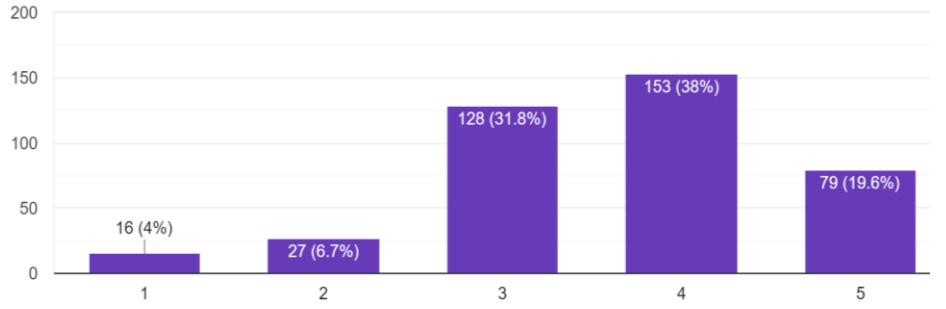
18- GPM4- Due to the existence of sustainable management of green banking products ,you prefer buying a credit card made of recycled plastic or bio-plastic ...عاد تدويره أو البلاستيك الحيوي بدلاً من البطاقة البلاستيكية.
403 responses



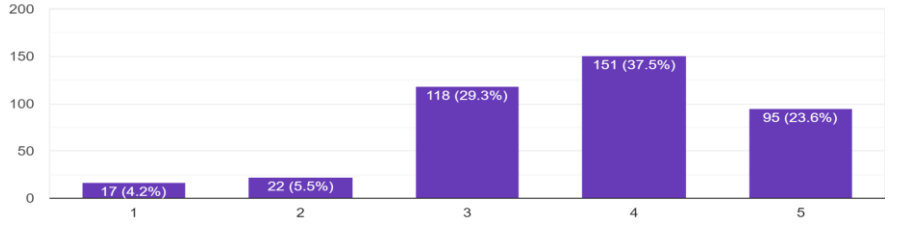
19-GPM5- Due to The sustainable management of green Reward systems, you might redeem your accumulated golden points in your banking account by env...ك الذهبية المتراكمة في حسابك المصرفي بهدايا صديقة للبيئة
403 responses



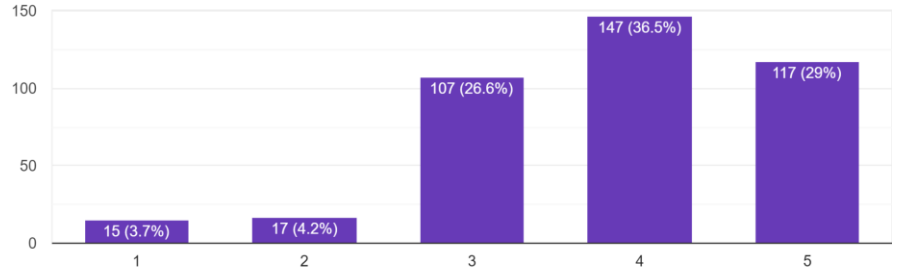
20- GMP6- You agree to benefit from the management of insurance premiums for eco-friendly actions as low charge insurance if utilizing used or recycl...زاء المستعملة أو المعاد تدويرها عند إصلاح السيارات التالفة.
403 responses



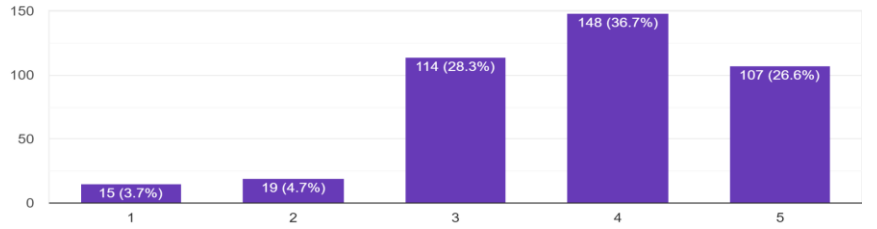
21- GPL1- You consider Digital banking is a must when you deal with your bank as part of the bank Green platform management . انت تعتبر الخدمات المصرفية الرقم...بد منه عند التعامل مع البنك كجزء من إدارته الخضراء للمنصة
403 responses



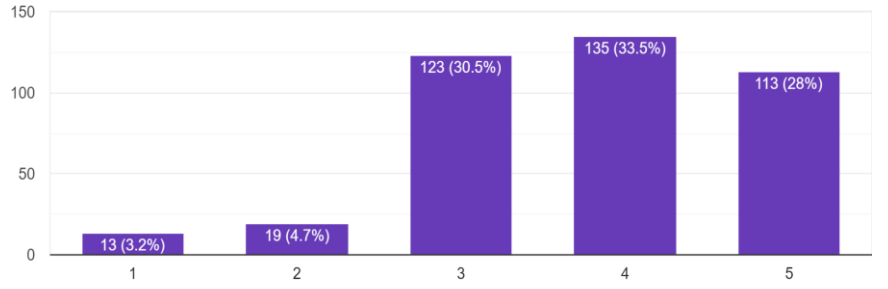
22- GPL2- You agree that your bank must have ICT skills management (skills in information and communications technology) to use and comprehend a va...ت لاستخدام وفهم مجموعة متنوعة من البرامج التكنولوجية.
403 responses



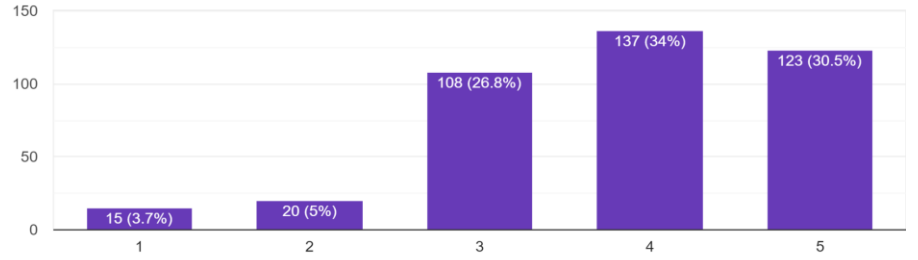
23- GPL3- You agree that Intranet ,call center, and electronic fund transfer ,are all examples of ICT capabilities that your bank should manage . الإنترانت , مر...تكنولوجيا المعلومات والاتصالات التي يجب على مصرفك إدارتها
403 responses



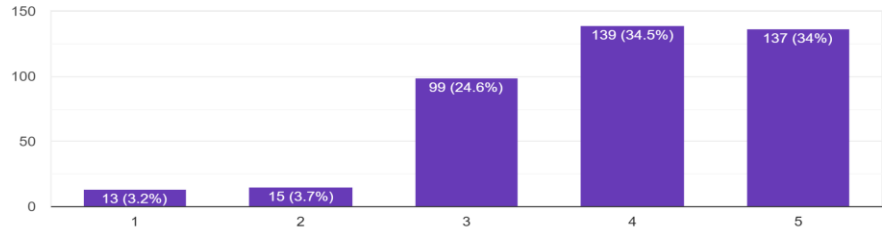
24- GPL4 - The bank you deal with should do the best fintech management as making his apps convenient to pay bills ,to transfer funds or to handle other...لفواتير أو تحويل الأموال أو التعامل مع المهام المالية الأخرى
403 responses



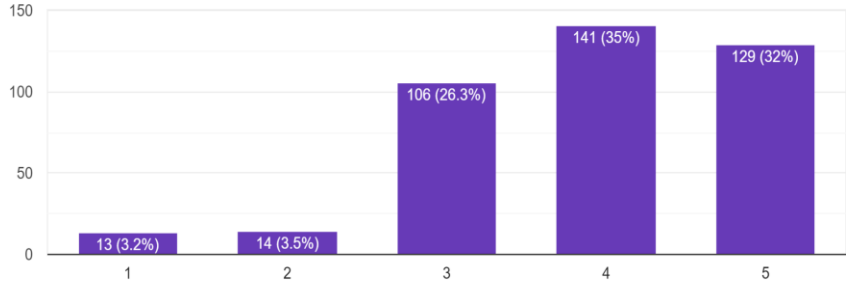
25- GPL5- Robotic process automation (RPA), ATM locations feature ,bill payment alert are all R&D green innovative activities that should be managed by the...مجال البحث والتطوير يجب أن يديرها البنك الذي تتعامل معه.
403 responses



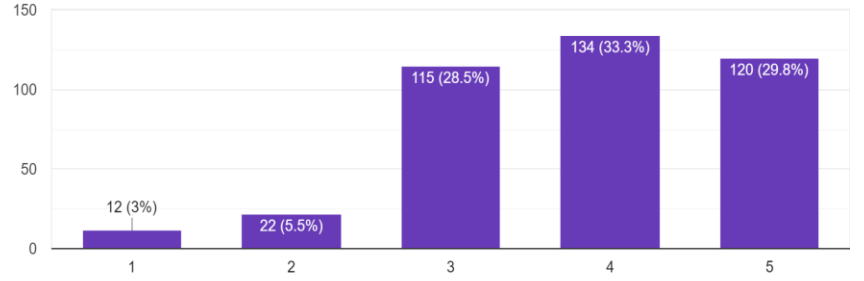
26- GPL6- The bank you deal with should manage the Mobile/SMS banking service in order to notify and alert efficiently all his clients. يجب على البنك الذي تتعام...الرسائل القصيرة من أجل إعلام جميع عملائه وتنبيههم بشكل فعال.
403 responses



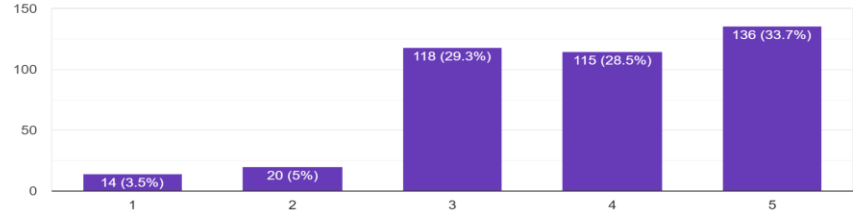
27- GPL7 - Your bank should manage his Online Payment Gateway services as POS (point of sale) because it is crucial for businesses and customers to c... POS لأنه من الضروري للشركات والعملاء إكمال معاملاتهم.
403 responses



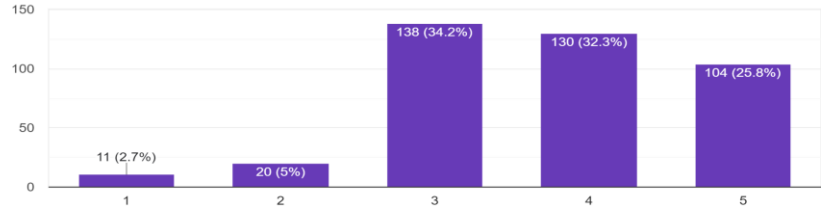
28- GPL8 - Express cash system management which is the management of any cash withdrawals made using the card and PIN on an ATM are essential to be...لآلي ، ضرورية ليتم تنفيذها من قبل البنك الذي تتعامل معه
403 responses



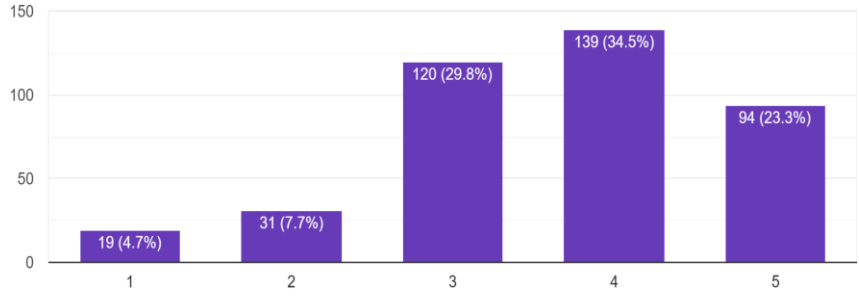
29- GPL9 - The bank you deal with should ensure having a secured and strong Swift System management . Note that SWIFT is :the society for worldwide... (جمعية الاتصالات المالية العالمية بين البنوك)السويفت
403 responses



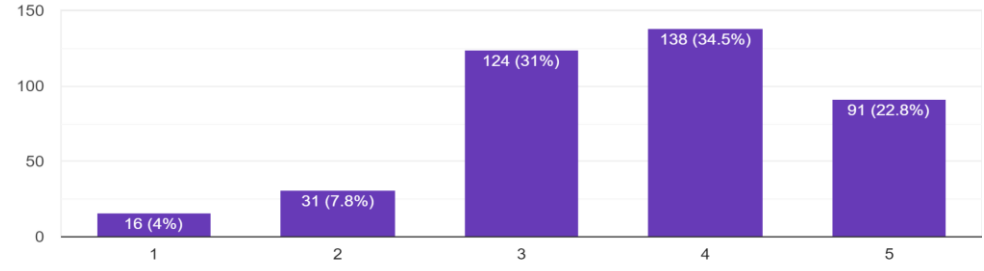
30- GPL10- The bank you deal with should have Technical assistance (TA) management which is the management of the banking mode support because it f...صرفي لأنها تسهل إعداد وتمويل وتنفيذ المشاريع والبرامج.
403 responses



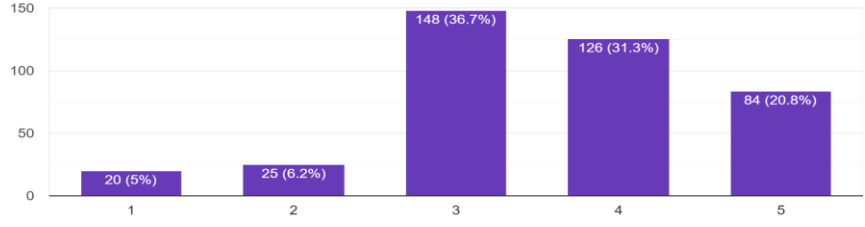
31- GHR1- Green human skills management by providing green awareness for the staff of the bank you deal with is essential . تعد إدارة المهارات البشرية الخضراء ...لال توفير التوعية بالسياسة الخضراء لموظفي البنك الذي تتعامل معه
403 responses



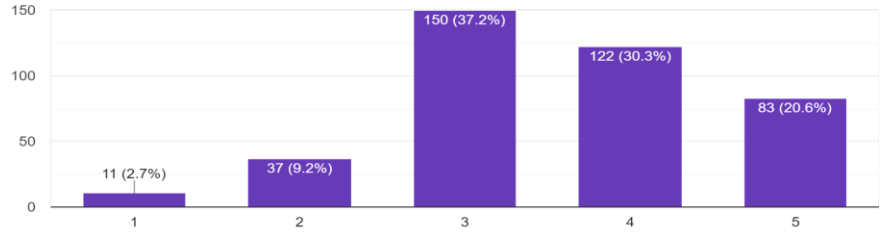
32- GHR2- The green training should be managed by the banks you deal with ,by providing for the staff with working methods to ensure adequate resource ut...دام الكافي للموارد ، للحفاظ على الطاقة وللحفاظ على البيئة
400 responses



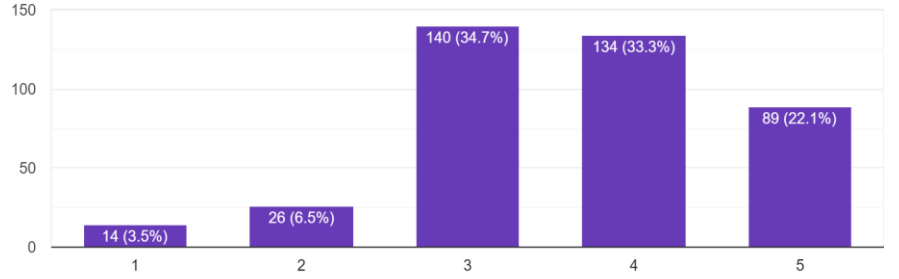
33- GHR3- Hiring people who identify the EMS (environmental management system) should be done by the bank you deal with as per its Green human ca...بنك الذي تتعامل معه وفقًا لإدارة القدرات البشرية الخضراء.
403 responses



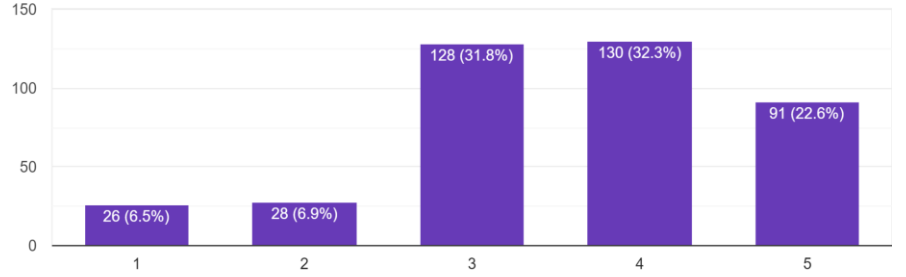
34 - GHR4 - Green expertise management helps the bank you deal with in their transformational efforts to become greener because they are specialized o...خضرارًا لأنهم متخصصون في بيئة الجودة والتنمية المستدامة
403 responses



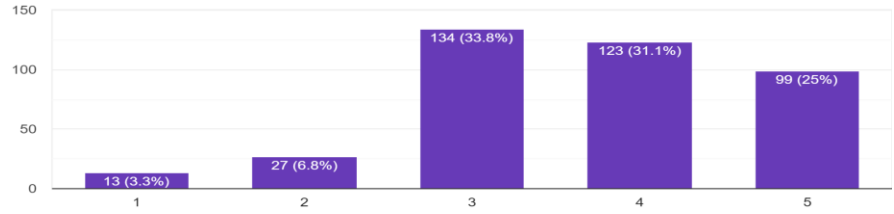
38- EMG4- Renewable energy sources management (ex: solar and wind energy) is essential in the bank Ideal with. تعد إدارة مصادر الطاقة المتجددة (مثل: الطاقة الشمسية وطاقة الرياح) ضرورية في المصرف الذي اتعامل معه
403 responses



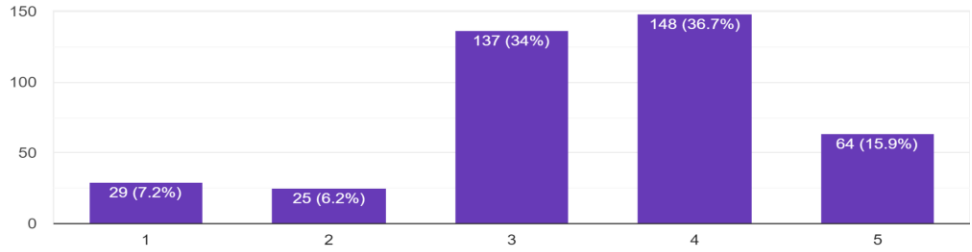
36 - EMG2 - You agree not taking a receipt after executing the banking transaction as per the banking paperless management . أنت توافق على عدم استلام إيصال بعد تنفيذ المعاملة المصرفية وفقًا للإدارة المصرفية غير الورقية
403 responses



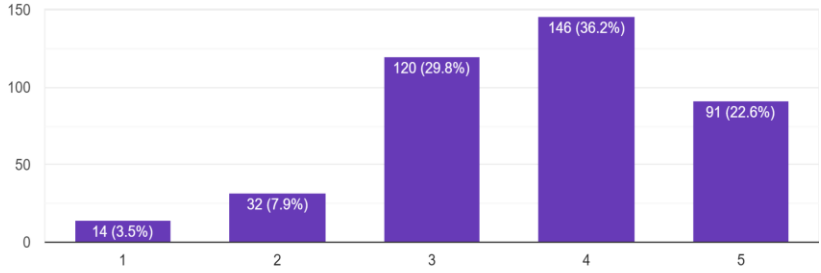
37 - EMG3 - It is a necessity for the bank I deal with to Refuse supporting the polluting businesses as per his environmental management إن رفض دعم الأعمال ا...كل من أشكال الإدارة البيئية التي يجب على مصرفي تطبيقها
396 responses



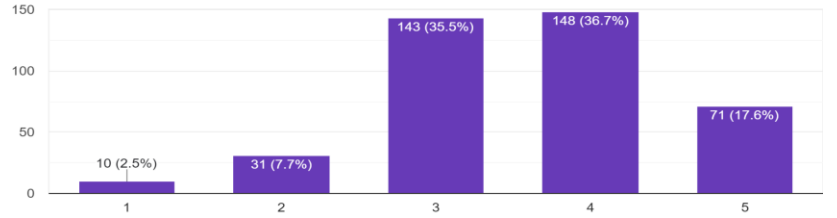
39- EMG5 - You are interested in reading the green annual report published by the bank you deal with to detect his green activities and ensure the applicat... من أن البنك الذي تتعامل معه يطبق الإدارة الخضراءالمستدامة
403 responses



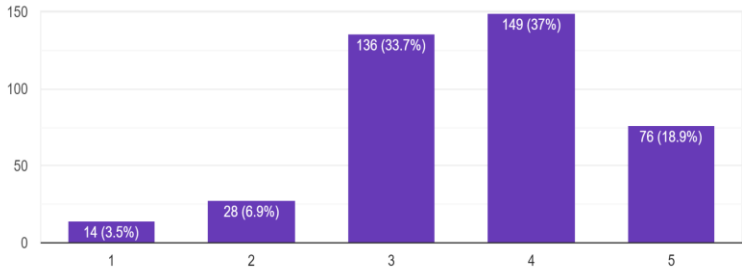
40- EMG6 - The bank you deal with should apply a management of Green community activities to support the environment and to gain an eco-friendly reput...ة المجتمع الأخضر لدعم البيئة واكتساب سمعة صديقة للبيئة.
403 responses



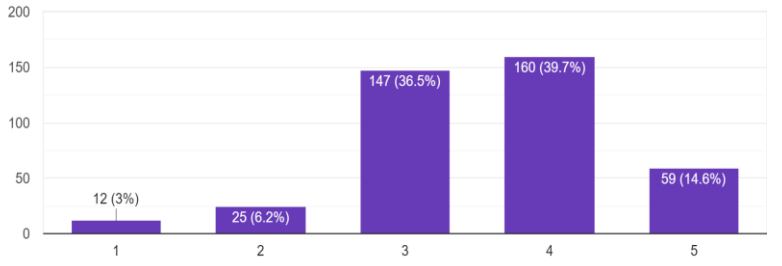
41- EMG7 - People green awareness management via green orientation programs during events such as FIFA world cup or Marathon is very essential to e...المارثون أمرًا ضروريًا للغاية في المصرف الذي تتعامل معه
403 responses



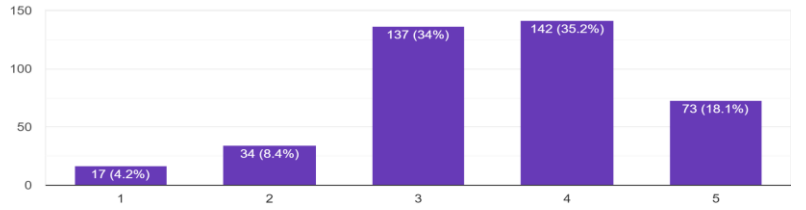
42 - EMG8 - The collaboration management between the bank you deal with and other sectors or organizations for green yearly goals achievements are i...ات أو المنظمات الأخرى مهمة جدا لتحقيق أهداف خضراء سنوية
403 responses



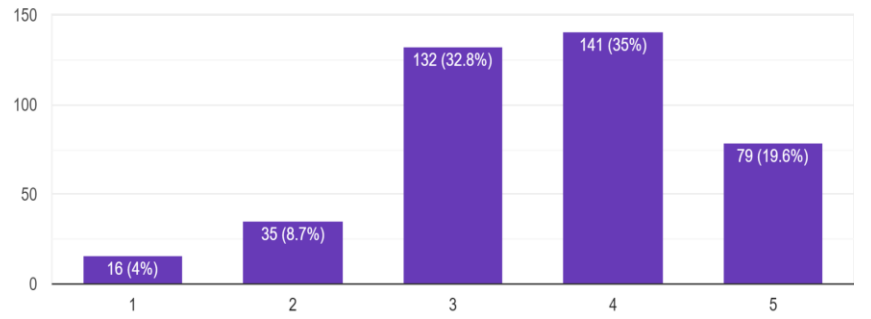
43 - EMG9- Green campaigns management as green ads on the bank platform or ads inside the bank ,green TV Ads ,green displays ,green slogans , are al...شكال الإدارة البيئية الضرورية في المصرف الذي تتعامل معه
403 responses



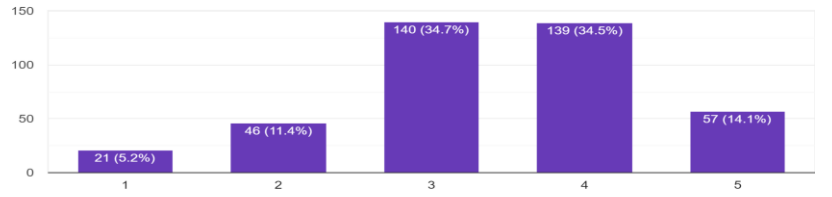
44- GFM1-The Bank you deal with should invest in startups and venture firms that develop green and climate-smart technologies as part of its Green vent... صديقة للبيئة كجزء من إدارة رأس ماله الاستثماري الأخضر.
403 responses



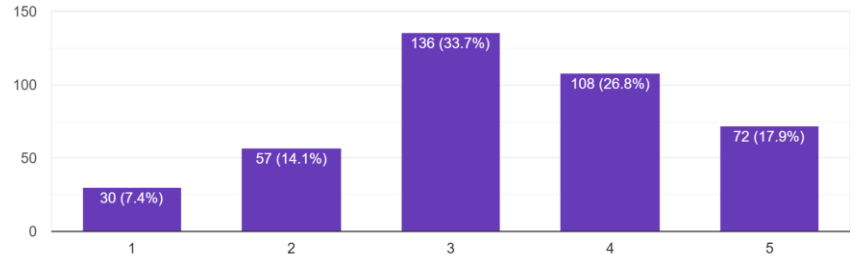
45- GFM2- The bank you deal with should invest in funds dedicated to financing green projects as part of its Green private equity funds management . يجب ... الخضراء كجزء من إدارته الخضراء لصناديق الأسهم الخاصة.
403 responses



46- GFM3- As part of green brokerage management it is essential that the bank you deal with buy and sell green bonds on the client behalf which promotes... الخضراء نيابة عن العميل مما يعزز الاستثمارات الخضراء.
403 responses



47- GFM4 - The issuance of debt security to finance or refinance initiatives that have positive impact on the environment is essential as part of green ...زء من إدارة السندات الخضراء في المصرف الذي تتعامل معه.
403 responses



Nour NASSAR

SUSTAINABLE MANAGEMENT FOR GREEN COMPETITIVENESS IN THE BANKING SECTOR

Doctoral Dissertation

Social Sciences,
Management (S 003)

TVARIOJO VALDYMO TAIKYMAS SIEKIANT DARNAUS KONKURENCINGUMO BANKININKYSTĖS SEKTORIUJE

Daktaro disertacija

Socialiniai mokslai,
Vadyba (S 003)

Lietuvių kalbos redaktorė Audronė Jonikienė
Anglų kalbos redaktorė Jūratė Griškėnaitė

2025 05 12. 18,8 sp. l. Tiražas 20 egz.
Leidinio el. versija *https://doi.org/10.20334/2025-036-M*
Vilniaus Gedimino technikos universitetas
Saulėtekio al. 11, 10223 Vilnius
Spausdino UAB „Ciklonas“,
Žirmūnų g. 68, 09124 Vilnius