An-Najah National University

Faculty of Graduate Studies

GREEN INTELLECTUAL CAPITAL, GREEN INNOVATION AND GREEN TRAINING FOR ENVIRONMENTAL PERFORMANCE: EVIDENCE FROM THE PALESTINIAN BANKING SECTOR

By

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Dedication

To the soul of my father, I dedicate this thesis.

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My deepest thanks are extended to all the people who, in one way or another, supported me throughout this work.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

GREEN INTELLECTUAL CAPITAL, GREEN INNOVATION AND GREEN TRAINING FOR ENVIRONMENTAL PERFORMANCE: EVIDENCE FROM THE PALESTINIAN BANKING SECTOR

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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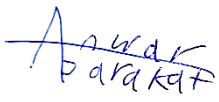
Signature: 

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GREEN INTELLECTUAL CAPITAL, GREEN INNOVATION AND GREEN TRAINING FOR ENVIRONMENTAL PERFORMANCE: EVIDENCE FROM THE PALESTINIAN BANKING SECTOR

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Abstract

The notable incremental demand for environmental performance in the banking sector has created a massive need to examine how green practices influence ecological performance. This study aims to investigate the impact of Green Intellectual Capital (GIC), Green Innovation (GI), and Green Training (GT) on Environmental Performance (EP) in the Palestinian banking sector, providing insights to improve sustainability practices. The sampling plan for this research included selecting 97 managers from 12 different Palestinian banks as the target population, given their direct engagement in green initiatives implementation. A quantitative research approach was used, and data was collected through structured questionnaires.

The sample size was determined to ensure a representative group of employees across multiple banks, capturing diverse GIC, GI, and GT perspectives. This sample allowed for using Structural Equation Modeling (SEM) techniques to analyze the relationships between the variables. The findings confirm a strong and positive correlation between Green Intellectual Capital and EP, meaning that the more a bank adheres to environmental principles, the more likely it is to record better ecological results. Moreover, the result proves a positive relationship between GI and EP.

This result highlights the importance of innovation activities in maintaining a sustainable environment. The study also stresses the significance of GT in enhancing Green Intellectual Capital and GI and in promoting the culture for ecological development. This study is helpful to policymakers and bank management in Palestine as they can apply some recommendations on sustainable practices in the banking system.

The results will help to expand the knowledge of the concept of sustainability in the context of the banking field and provide further groundwork for more investigations of the establishment of sustainable practices in the financial sector.

Keywords: Green Intellectual Capital; Green Innovation; Green Training; Environmental Performance; Partial Least Squares Structural Equation Modeling (PLS-SEM); Banking Sector.

Chapter One
Introduction and Theoretical Background

1.1 Overview

This chapter provides a basic understanding of this study. It introduces critical insights into the relationships between green intellectual capital (GIC), green innovation (GI), and green training (GT) and their impact on environmental performance (EP) in the Palestinian banking industry, outlining this research's significance, scope, and goals. The theories that direct our inquiry are also presented in this chapter.

1.2 Theoretical Basis

The world faces environmental and climate change-related issues, including droughts and extreme heat, as well as the exhaustion of nature's resources to meet the demands of the world's constantly growing population without considering the needs of the next generation. This led to a disruption of the environmental balance and the occurrence of natural disasters (Ahakwa et al., 2021). This, in turn, raised the issue of concern for the environment from environmental protectors, the government, and international organizations, and therefore, ecological sustainability emerged as a top priority for the global community. Countries, especially developed ones, began offering environmentally friendly or green products and services until consumers' acceptance of the transition to a green environment increased (Yong et al., 2020). Additionally, profit-driven businesses adopted this style and were able to use environmental concerns as a source of edge over rivals (Fernando & Fernando, 2017).

As a result, financial institutions understood that environmental performance and economic success are related. Green innovations and technology were incorporated into the operational frameworks of numerous business ventures across all industries, particularly the banking sector (Fernando & Fernando, 2017). Environmental initiatives have helped businesses turn a profit, save costs, and become more competitive. The banking sector is one of the sectors that benefit from adopting sustainable environmental activities. It is the backbone of the financial system and can significantly promote sustainable development and protect the environment by implementing green banking techniques, goods, and amenities (Abbood & Neama, 2023).

The Palestinian Monetary Authority published a fact sheet in 2022 that lists 13 banks as being regulated, with an aggregate of 378 locations and branches and employing 7,366 people (PMA Annual Reports, 2022). These banks seem interested in supporting sustainability, as a total of 4,976,840 dollars was contributed towards the development sector by the banking industry via 618 partnerships with civil organizations, including 15,000 dollars in funding from the Association of Banks. One hundred and fourteen organizations paid $1,470,188 to the health and environment sector, representing 30% of the banking industry's overall growth impact. About $27,840,532 in total was donated by banks over the five-year period of 2018–2022, of which $10,409,946 was toward environmental performance (Association of banks, 2022).

According to the Institute for Development and Research in Banking Technology, green banking encompasses many practices and principles that render banks sustainable in the economic, environmental, and social domains (IDRBT, 2013). To promote and embrace green EP in strategies and services, all organizations, particularly banks, must explore, analyze, and assess the devices, practices, and behaviors that influence the environment. One of these instruments, human resources, is the most crucial (Kanan et al., 2023). According to (Fayyazia et al. 2015), managing the environment must be integrated into human resource management (HRM) since it is vital.

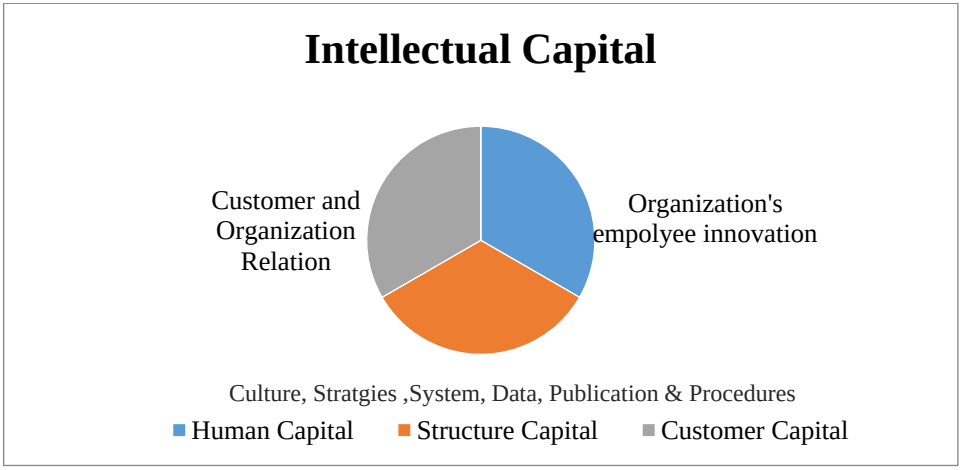
The environmentally friendly human resources management concept was developed as a sustainability tool that aligns environmental goals with human resource management (HRM) practices, including selection, training, and reward (Kanan et al., 2023). Intellectual Capital is considered the primary key to human resources in light of the realization that the factors influencing an institution's sustainable performance aren't limited to what it shows regarding raw materials and cash capital. In today’s world, institutions are increasingly defined by intangible knowledge assets representing the most valuable and significant resources (Dwikat et al., 2022). Intellectual capital first surfaced at the end of the 20th century, and its purpose was to capitalize on an institution's creative and innovative individuals. As the human element has become the primary driver of excellence, staying alive, and permanence for business organizations in contemporary economies, it also fosters creativity and innovation. As a result, intellectual capital is necessary for the prosperity of institutions and organizations.

Green intellectual Capital (GIC) is an approach to human resource management that incorporates sustainability implications, operational rules, procedures, and standards related to the organization's mission (Marco-Lajara et al., 2023). Furthermore, green practices protect the long-term sustainability goals of an organization while ensuring sustainability practices. GIC's actions and GI develop potential environmental and regulatory efficacy. In an intensely competitive environment, GIC improves sustainable development (Malik et al., 2020).

However, its function has not been viewed from a broad angle. Integrating green into strategic planning has recently gained speed, covering all businesses, including the issue of the green banking system, which has proven to be a significant concern for companies. Some corporate responses to environmental problems and financial sustainability promote GIC and adopt a green workforce policy (Zhang et al., 2022). Every company, especially those operating in a highly competitive and regulatory environment, must balance its competence in the different areas. It becomes challenging for a company to raise its financial performance, retain cultural practices, and integrate environmentally friendly practices into day-to-day operations after implementing sustainability initiatives. As shown in Figure 1, GIC includes the following essential aspects: human capital, structure capital, and customer capital.

Figure 1

Intellectual Capital and Components Towards Competitive Advantage



Source: Alkhatib, A.W. and Valeri, M. (2024). Can intellectual capital promote a competitive advantage? Service innovation and big data analytics capabilities in a moderated mediation model. European Journal of Innovation Management, 27(1), 263-289

Tolliver et al. (2021) argued that since human resources are the foundation of businesses, sustainable development is inextricably linked to human resource management. In a broad sense, GIC practices help organizations develop a green workforce that is aware of and supportive of green efforts. This is based on the idea that companies adopting green policies are more likely to achieve environmental performance as a business objective. Given the need for companies to integrate sustainability into their systems, adopting integrated GIC practices creates an overarching framework with distinct elements. Doing so encourages us to employ a comprehensive business impact strategy to adopt improved green policies (Amjad et al., 2021).

The push for environmental, financial, and environmentally inclusive approaches in banking firms has arisen due to growing environmental problems and the necessity of sustainable practices (Federica Ielasi, 2023). Businesses use green principles to create a lasting competitive advantage and gain that competitive advantage. They always strive to understand and use GIC. Future studies are anticipated to successfully build a deliberate and comprehensive model for GIC's growth, combining culture, organizational transformation, and high technology to formulate a coherent plan that aligns with corporate objectives and maintains GIC's integrity.

The banks' establishment aims are to create an efficient environmental oversight system by adopting social and environmental policies. The banks that implemented socially and ecologically conscious lending and financial planning changed their business lending, bond insurance, and investment banking procedures. Due to public awareness of environmental issues, these banks were advantaged over their rivals. Nath et al. (2014) recommended that banks implement green lending standards in a way that will not impact their customer base.

1.3 Problem Statement

In the early years, corporations viewed the world as an unlimited resource or free good, erroneously believing that their actions do not negatively affect the environment. This unconscious mentality has led to waste, depletion of resources, and environmental pollution. This has led to many calls for companies to take environmental responsibility and promise to protect the environment (Yong et al., 2019). 'Greening' has become a more attractive proposition. Companies trying to survive and compete in a highly focused and regulated environment have paid attention to the need to balance their financial, cultural,

and environmental competencies and implement sustainability initiatives through greening human resource practices, in which the primary key is intellectual capital (Abdul-Rashid et al., 2017). Recent studies have confirmed the positive role of financial intermediation in increasing economic growth and achieving sustainable development (Lontchi et al., 2022). They have also clarified that the role of monetary investment in making banks gain significant importance in the world and Palestine is not hidden (Mhadhbi et al., 2020). There is a growing trend to provide banking services like developed countries, moving towards green banking practices and services (Mhadhbi et al., 2020). The aim is to improve the Palestinian banking sector, attract modern foreign banks that follow green policies, and pay attention to green banking. However, the investigation of this context in Palestine is still vague because no existing studies have been done so far, and hence, our research needs to study the subject closely.

Zhang et al. (2022) stated that GI and GIC interact closely, although it is accepted that they have a good impact on the environment; thus, it is good to understand each of their aspects. According to Zhang et al. (2022), in research addressing the link between GIC and innovation, little attention is paid to the "green difference" in HRM or innovation. There is still a need for further studies on the relationship between these two functions to assess the connections between the many operational areas of the company. This study thoroughly examines the links between GIC, sustainability, innovation, and intangible environmental resources. Using GIC, it also analyzes the Palestinian financial sector's sustainable and green banking productivity and ecological efficiency. Additionally, the study adds to the literature on financial inclusion concerning GIC and innovation, which is currently underrepresented.

This study creates an indicator system to promote investigation on sustainability, evaluation, and analysis in connection with green banking owing to the lack of uniformity in sustainability. According to Munawar et al. (2022), the management ramifications for banks adopting sustainability need a sustainability management framework to assess and track the action policy for sustainable banking and develop a sustainability initiative underlining GI and GIC. As a result, banking institutions can control environmental, social, governance, and operational risks. Global stakeholders have recently started showing keen interest in monitoring GIC's and GI's effectiveness in terms of sustainable performance.

Banks must analyze and use GIC and GI information to increase performance and efficiency internally and externally. This study will bridge the gap between the two by examining the impact of GIC and GI on the long-term functioning of financial institutions in Palestine. To our knowledge and after thorough investigations, no research has examined how GIC affects the sustainability performance of financial institutions in Palestine. The study focuses on the banking sector because it is part of Palestine's listed financial institutions and will be conducted to add to the existing information.

This study bridges the knowledge vacuum by concentrating on the impact of green intellectual resources, structural capital, and capital. Similarly, the study fills the gap between earlier, more philosophical, evaluative, and subjective research. Studies have demonstrated the benefits of GIC in boosting strategic strength when GI is moderated (Ullah et al., 2022). In addition, when GIC policies are used to encourage environmental collaboration, their impact may be influenced by other confounding variables. This study intends to analyze how GIC affects a sustainable environment with the help of the GI factor. GI and intellectual capital have gained immense importance in the modern era, so it is vital to investigate their relationship.

When analyzing the effect of GIC on innovation performance, with a specific focus on GIC initiatives, it is vital to consider other organizational sub-processes. A thorough examination is needed to comprehend the interaction between GIC, environmental effects, and how these processes may mediate and affect that relationship. Researchers have found GT to be an independent variable with pro-environmental effects and impact on job satisfaction. Pinzone et al. (2019) state that initiating GT positively impacts pro-environmental behavior and job satisfaction. Considering the previous research gap, researchers study GT, GI, and GIC in a sustainable environment. Since the current establishment has not been previously studied, its significance has grown in the modern world, making it essential to investigate the relationship.

1.4 Research Questions

This study addresses the following research questions:

RQ1: How does GT contribute to EP?

RQ2: What is the relationship between GT and GI?

RQ3: How does GT influence GIC?

RQ4: What is the impact of GIC on EP?

RQ5: How does GIC affect GI?

RQ6: How does GI influence EP?

RQ7: Does GI mediate the relationship between GIC and EP?

RQ8: Does GIC mediate the relationship between GT and EP?

RQ9: Does GI mediate the relationship between GT and EP?

RQ10: Does GIC mediate the relationship between GT and GI?

1.5 Research Objectives

This research examines the connections between GI, GT, GIC, and EP. It mainly explores the sustainability benefits of GIC. It also examines how all these variables interact together to enhance EP. The objectives of the research are:

1. To examine the effect of GT on EP.
2. To investigate the relationship between GT and GI.
3. To examine the influence of GT on GIC.
4. To analyze the impact of GIC on EP.
5. To assess the effect of GIC on GI.
6. To determine how GI influences EP.
7. To examine whether GI mediates the relationship between GIC and EP.
8. To explore if GIC mediates the relationship between GT and EP.
9. To investigate whether GI mediates the relationship between GT and EP.
10. To assess whether GIC mediates the relationship between GT and GI.

From a practical standpoint, this research helps financial institutions set environmental strategy goals connected to certain facets of their GIC and innovation activities. Employees probably become heavily engaged in fostering ecological policy. The report also assists managers in focusing their GI efforts on H.R. initiatives that improve employee engagement and expertise, as well as joint investments in GIC. Furthermore, the results of this research provide managers with advice on how to enhance sustainable

performance. A GI-based approach may improve EP. It may be difficult to pay close attention to this issue since integrating environmental standards outside organizational boundaries is not a reliable indicator of a firm's performance. Managers should focus on techniques and procedures that include GI and utilize GIC. They must also recognize that resistance to change may hinder the implementation of GI. Companies should encourage green recruitment and selection and provide sufficient sustainability awareness training to all staff to promote green employment and appointments. This study offers financial businesses a conceptual framework whose activities may positively influence environmental sustainability.

1.6 Importance of the Study

Since the early 1990s, much research has been done on the value of intellectual capital. However, little research has been done on using green GIC, the pool of intangible resources, knowledge, and capabilities that combine GI and environmental preservation to provide worth. The impact of GIC on sustainable development, particularly in terms of a company's ability to meet and surpass societal expectations concerning ecological issues, has seldom been a central focus of scientific research. According to Asiaei et al. (2023), the key to comprehending the challenges associated with companies past attempts to address sustainability challenges, such as green-washing, and the real challenges that need to be acknowledged in the future is understanding the processes by which intellectual capital translates into value creation and sustainability practices. According to Yong et al. (2019), altering organizational procedures to achieve a green aim is a "forbidden field" of growth as it impairs the organization's capacity to maximize operations and build strategies.

The impact of business on the environment is undeniably becoming a bigger problem. Even if it might not be one of the biggest garbage producers, the financial industry can cut waste and modify its practices to be more ecologically friendly (Mehmood & Hanaysha, 2022). This view suggests that sustainable development must be promoted so the banking industry can address global issues. Applying GIC and GI information allows banks to enhance their internal and external performance and efficiency and control operational risks. Not only does training on green practices have a positive impact on reducing environmental degradation, but it also positively influences public health issues and productivity growth (Yusliza et al., 2020). As a result, revamping business strategies

and creating and organizing new skills and innovations are necessary for sustained success.

Research on the importance of GIC is still insufficient and frequently ignored despite the contribution of intellectual Capital in creating sustainable environments. The relationship between GIC and GI has not been extensively studied in the past, even though research on GIC has demonstrated its positive effects on organizations in other fields. This study will, therefore, contribute to the theoretical framework and future research in this area. Green workplace practices may promote the critical variables and mediators for GIC and EP if they improve staff attributes like motivation and efficiency. Employers who consider environmental responsibility when hiring inexperienced staff members will attract employees who share their concern for the environment. Businesses aim to gain from sponsoring environmental efforts since they can increase employee productivity and retention rates and enhance employee motivation and skill. According to Song et al. (2019), companies that go green aim to create a more sustainable corporate culture, foster employee happiness, increase productivity, and lower expenses. Generally, encouraging a greener culture reduces costs and boosts sales.

1.7 Literature Review

1.7.1 Theoretical Background

Several researchers have explored the connection between environmental deterioration and various influencing factors, including deforestation, traffic congestion, e-commerce patterns, climate regulations, technological advancements, and responsible practices within the sustainable supply chain (Fernando & Fernando, 2017). Different scholars explored diverse perspectives in the study of eco-friendly progress and created unique frameworks to address challenges related to sustainability. However, other emerging obstacles must be addressed to establish and reinforce systems capable of guiding and overseeing shifts toward environmentally friendly and environmentally conscious surroundings. The insights in this literature are poised to assist societies in their transformation journey.

Preserving the environment and natural resources is essential in today's competitive economic environment, characterized by intense globalization and industrialization (Horváthová, 2010). The banking industry contributes significantly to sustainable

development. According to Elayan (2022), sustainability is one of the biggest market trends. For instance, in the current world, most investors are interested in sustainability and environmental impact concerns, and firms' management emphasizes social responsibility and ethical investment (Nizam et al., 2019). According to Rashid (2024), banks support innovation, economic growth, and prosperity by pushing financial resources through the system and making them the lifeblood of all modern markets.

Even if they are already aware of the link between sustainable performance and their commercial performance, banks must be able to value the significant social and environmental criteria for economic success with proper data availability and quality (Chen & Chai, 2010). This will make it easier for investors to incorporate their sustainability practices into existing and future shareholder and company decision-making processes. More investors have promised to include social and environmental performance in their investment strategies (Nizam et al., 2019).

Globally, green banking is becoming increasingly significant, and banks are taking measures to prevent environmental deterioration through sustainable practices and green policies (Zahra et al., 2022). In developing countries, green banking is also flourishing well. By using human and social capital effectively, GIC may be a key component in helping businesses increase their market share. According to Rouf and Akhtaruddin (2018), human capital, training, and the efficient use of structural resources are more critical to achieving sustainability than material assets. Therefore, organizations should focus more on managing human resources since sustainable banking depends on workers who care about the environment (Zahra et al., 2022).

Environmentalism serves as the operational foundation of green banking in the financial industry. Adopting green banking involves changing the bank's operations and the culture of the whole financial sector (Zahra et al., 2022). Green banking entails formulating rules and policies for the restructuring of bank operations. Even though all bank operation activities remain unchanged, there has been an improvement in operational activities linked to the sustainable environment. We have seen green banks focus on electronic transactions and use less paper. The main goal of green banking is to persuade financial firms to support pro-environmental initiatives like using renewable energy, pollution-free manufacturing processes, eco-friendly waste management, and biodiversity protection (Khatun et al., 2021). Green banking calls for converting traditional banking procedures

into eco-friendly procedures that guarantee environmental performance (Yong et al., 2023). The approach to green banking, however, varies from bank to bank. Some banks embrace strategies that include using online payment systems, streamlining their water, gas, and electricity consumption, and implementing digital technologies (Khatun et al., 2021). Green banks have advocated for the slogans "Save paper, save trees, conserve energy, protect natural resources, use cloth bags, reduce, reuse, and recycle, be aware of the way you use everything" and "adopt a paperless habit." Although these channels impact operations and image, they do not always represent operationalized sustainability. According to Asadi et al. (2020), compared to paper, digital technology usage may have a higher energy and carbon footprint.

1.8 Sustainable Environment Performance

The impact that a company's operations have on the environment is referred to as EP. Examples of EP include using environmentally friendly materials in goods, decreased usage of ecologically hazardous materials, fewer pollution levels, carbon emissions, and trash at the production sites. EP refers to organizational actions beyond obeying laws and rules to meet and even surpass social-ecological norms. It considers the environmental impact of managerial practices, outputs, and resource usage in a way that best complies with statutory ecological standards. According to Singh et al. (2020), the effectiveness of environmentally friendly products, the development of green processes and products, the integration of ecological sustainability concerns into corporate operations, and the design of products impact EP (Naffziger, 2023). It might be argued that banks do not significantly contribute to environmental pollution and emissions (Wang & Juo, 2021). That is not the case because their actions do have a considerable impact on the external environment. Therefore, banks that are among the greatest technology users ought to lead by example by encouraging ethical environmental behavior.

Zhang et al. (2022) state that green banking initiatives at the corporate and policy levels are supported by funding green projects that advance environmental sustainability. Therefore, green building practices (GBPs) enhance banks' EP by curbing environmentally harmful activities like burning fuel, using paper, and emitting carbon emissions and promoting environmentally friendly practices like raising staff environmental awareness and education, building green infrastructure, and utilizing solar and wind energy.

Customers' behavior can be altered by green customer awareness in a variety of ways, including their consumption patterns, level of desire for environmentally friendly products, the choice of environmentally friendly items, and involvement in campaigns to raise awareness of the value of green products (Alamsyah et al., 2019). The organization needs to take this step to learn more, and it fits with the pro-marketing plan to increase green awareness behavior.

1.9 Green Intellectual Capital

A company's common knowledge, information, technology, intellectual property rights, expertise, organizational growth and capacity, collaborative systems, customer interactions, and brands are just a few of the assets that make up its intellectual capital (Asiaei et al., 2021). Green management has become every organization's top managerial concern due to the growing environmental consciousness (Chang & Chen, 2012). The term GIC encompasses all the information a company might use to its advantage when implementing ecological management. Yusliza et al. (2020) stated that GIC is a well-known, complicated idea that underpins its use as an enterprise's nonfinancial, nonphysical resource based on practical skills, knowledge, and experience to increase the organization's value. The result of fusing intellectual capital with environmental safeguards is GIC.

Establishing GICs significantly reduces local pollution (Jehan et al., 2020). Those GICs operating for a long time and expanding their branch networks have more pollution-reduction impacts (Asiaei et al., 2021). Secondly, developing GICs minimizes environmental contamination by boosting innovation potential, attracting increased foreign direct investment (FDI), and upgrading the industrial structure. Thirdly, a country’s industrial power, population, and degree of marketization influence GICs' effectiveness in decreasing pollution (Khatun et al., 2021).

Investigations demonstrate that the efficiency of GICs in reducing emissions in cities with significant economic strength and large populations is primarily due to the encouragement of innovation (Sobaih et al., 2020). Cities should continue to strengthen the operating efficiency of regional banks, appropriately manage their contacts with local governments, distribute monetary resources, and use green finance to improve the environment (Qureshi et al., 2020). The motivation for turning green comes from several corporate aims. Yadiati et al. (2019) attribute it to enterprises' internal recognition of the

need to reduce ecological restrictions and take ownership of improving environmental circumstances. Organizations need to gain a positive reputation within their target market. For instance, businesses may try to use the "green" label due to customers' growing demand for ecologically friendly products and rising environmental consciousness (Bansal & Roth, 2000). Thirdly, organizations may embrace environmental consciousness to obey mandatory national and international standards, compelling businesses to adopt sustainable business practices (Yadiati et al., 2019). Employees in any firm may increase environmental performance by adopting pro-environmental behavior (Jehan et al., 2020). Due to the frightening scenario where the climate changes, the environment degrades, and resources become scarce, pro-environmental activities in organizations are growing daily. The protection of the environment is currently a global trend (Jehan et al., 2020). As a matter of concern for every society, many organizations must develop environmental protection strategies.

GIC enables businesses to adhere to stringent international environmental requirements, satisfy consumers growing ecological consciousness, and generate value for the company. Wang and Juo (2021) examined the need for and the critical components of venture capital in fostering GI in the financial sector. They also reviewed the creation of models, the method by which human capital enabled the green creation of several industries. The findings demonstrated that the development of an ecological civilization, economic dynamics, and laws were prerequisites for converting conventional initiative capital into green development capital and for capital to support GI in corporate industries. It is, however, difficult to provide details on the impact of green awareness; it must be evidenced by data provided by a marketer, which is customer evaluation. For instance, increasing client green awareness and company image as an environmentally conscious business is the goal of the numerous efforts made by an Indonesian marketer for organic items like organic vegetables. This highlights how crucial it is for consumers to be aware of ecologically friendly products. The knowledge of environmental practices, which includes the effort, label, slogan, symbol, and brand, as well as concerns, can be used to evaluate green awareness.

1.9.1 Green Structural Capital

The institutionalized understanding of how organizational processes, structures, technologies, policies, and cultures take shape is known as green structural capital (GSC). Organizations have built structural capital that cannot be removed by personnel turnover. According to Chang and Chen (2012), software, hardware, files, organizational culture, and organizational competencies inside an organization are all considered structural capital. Green organizational capital, called structural capital, is the infrastructure stipulated, empowered, and developed to protect the environment or implement sustainability initiatives (Delgado-Verde et al., 2014). With the emergence of global environmentalism, corporations' ability to create and implement green initiatives to look for new markets or gain competitive advantages mainly depends on the environmental knowledge and culture already ingrained in their organizations (Fayyazi et al., 2015). GSC refers to the organizational capacity, obligations, information systems, supervisory philosophies, organizational cultures, business images, inventions, copyrights, trademarks, and other intellectual property related to sustainability or GI (Asiaei et al., 2021).

1.9.2 Green Relational Capital

Green relational capital (GRC) refers to how a business engages in corporate environmental management and GI with its partners, customers, and network members. These exchanges help the company turn a profit and provide it with an advantage over competitors. Relational capital refers to all the relationships the firm has with its main partners, suppliers, and consumer base. Businesses need the support and resources of important actors and outside groups to thrive (Chang & Chen, 2012). Nowadays, stakeholders and external groups are attracted by companies that observe environmental issues (Abuatwan, 2023). In line with the prevailing green pattern, companies must invest more in fortifying their relationships with stakeholders and outside groups where shared environmental concerns form the foundation of these collaborations.

1.9.3 Green Human Capital

This encompasses an employee's knowledge, abilities, expertise, perspective, insight, inventiveness, dedication, and other attributes related to GI or environmental conservation that are ingrained in the individual rather than the company (Yong et al., 2023). Since human capital is embedded in individuals rather than companies, it can be

taken away by a person leaving the company. Employee education on environmental issues is essential as companies must produce GI and sustainable leadership to adhere to external environmental restrictions (Chang & Chen, 2012). The idea that a firm's GHC affects its economic success is not new, but to fully grasp the relevance of the GHC's function in predicting EP, it is essential to consider GI. Businesses can create appropriate policies through GI to ensure the effectiveness of their environmental strategies. GI can, therefore, serve as a catalyst. In addition, GHC, which is focused on environmental issues, is more likely to support GI and increase business performance. Therefore, the more successful a company is, and the better its economic performance over competitors, the higher its stock of GHC will be.

1.10 Green Innovation

GI creates environmentally friendly products and processes by implementing corporate initiatives. Some of these policies consist of sourcing more environmentally friendly materials, maximizing the use of eco-design products, reducing emissions, and conserving energy, water, and other materials (Ahakwa et al., 2021). Producing environmentally friendly products or procedures by incorporating organizational practices is known as GI (Singh et al., 2020). It entails using ecologically friendly materials, minimizing resource use in production, and using eco-design. Past studies have established a positive relationship between the use of GI and firm performance, where businesses benefit more since they can deploy their green assets efficiently and effectively to satisfy client demands, exceeding their rivals (Nath et al., 2014). It is essential to state that employee attitude is vital in improving environmental outcomes.

1.11 Green Training

GT refers to planned events and activities that encourage employees to learn about, adjust to, and use skills for environmental preservation. Employees can enhance their knowledge, skills, awareness, and capacities connected to ecological conservation by receiving the appropriate training. Environmental departments should not be the only ones providing GT, but all organizations should include it in their educational offerings (Jehan et al., 2020). GT increases staff openness to the company's environmental initiatives. Employee knowledge management is utilized to conduct ecological actions as well. Employees with the proper training, assessment, and incentive programs may easily participate in environmental initiatives.

GT is one of the firms' most important green human resource initiatives for effective green management. Intellectual capital also focuses on training as one of its characteristics (Malik et al., 2020). Environmental education is a valuable strategy that can help in developing human resources. The objective is to increase public knowledge of environmental issues, encourage participation in greening efforts, and advance waste management and energy conservation (Ahakwa et al., 2021). Environmental training serves a considerable purpose in promoting the effectiveness of environmental management systems. Environmental planning is also essential for the environmental management structure to be successfully implemented and a green company culture to be established.

1.12 Green Intellectual Capital and Environmental Performance

Yadiati et al. (2019) argue that the drive for organizations to recognize the value of intellectual capital is at the core of the potential to enhance EP. The organization's reputation of being sensitive, adaptable, and accountable for initiating, improving, and promoting sustainable development is strengthened by the objectives for environmental issues. As a result, efforts to enhance an organization's reputation inspire a green image, encouraging a green culture with increased care for the environment, leading to performance gains (Yadiati et al., 2019). Pro-environmental behaviors correlate highly with EP and GIC (Nisar et al., 2021).

This study devised a multidimensional paradigm to carefully explore the relationships between GIC and sustainable effectiveness in the context of GRI, green policy, and pro-environmental practices to fill the vacuum in the literature (Yadiati et al., 2019). Differentiation brought about by the requirement for GHC capital may promote GI. GI will be significantly more successful if a company has a higher level of GHC (Nizam et al., 2019). Researchers contend that GHC is a platform to link staff awareness about the environment to GI, enabling businesses to take advantage of their potential for GHC for environmentally friendly processes and product development.

1.13 Green Innovation and Environmental Performance

GI is associated with a strong environmental performance policy that promotes EP. According to Ahakwa et al. (2021), GI has a projected advantage of ecological success. By reducing waste and expenses, saving money, time, and energy, and achieving success on all three axes, economic, environmental, and social green product and process innovation supports business efficiency. Additionally, it significantly reduces the organization's harmful ecological impact (Ahakwa et al., 2021). An efficient environmental management strategy is linked to GI, which enhances EP. Green products and process innovation improve a company's economic and social standing by cutting waste and costs (Singh et al., 2020). It also decreases a company's negative environmental impact. Earlier research has revealed that businesses should see GI as an initiative-taking organizational purpose and practice to improve EP to obtain an advantage over rivals rather than as a reactive response to stakeholder requests. Organizations should use innovative, environmentally friendly goods and procedures as essential tools to enhance their EP (Singh et al., 2020).

GI shows the steps taken to reduce the potentially harmful consequences of manufacturing and operations on the environment, focusing on enhancing the procedures, innovations, systems, products, and supervisory techniques (Asadi et al., 2020). Green development may be fostered through the practical application of these practices; hence, problems relating to environmental protection can be effectively addressed. Since GI changes how things are manufactured, saves resources, avoids pollution, and applies ecological management strategies in the workplace, it is one of the most significant environmental strategies. GI prioritizes minimizing waste, preventing pollution, and deploying technologies that prioritize environmental management (Asadi et al., 2020). Businesses may foster an environment that supports environmental innovation by utilizing GI strategies and taking the initiative instead of merely reacting to regulatory constraints.

1.14 Green Training and Environmental Performance

According to a prior study, growth in environmental conservation was caused by employees' overall growth in behavioral traits, attitudes, talents, and knowledge, which falls under the broad category of training and development. Previous studies also showed that GT improved the knowledge, skills, and abilities required for creativity, improving

an organization's performance by assisting in developing varied and multitalented individuals (Yafi et al., 2021). The performance of an organization is impacted by the level of training that its personnel have undergone. Training aids in developing the knowledge and skills required to meet various corporate goals and objectives, including enhanced performance (Ruth, 2009). Researchers have underlined how crucial GT is in improving the environmental management system's performance in terms of sustainability and reliability. According to quantitative analysis, GT is one of the main approaches to combating climate change as it pushes companies to manufacture low-carbon goods (Yafi et al., 2021). GT has been deemed essential to overcome personal barriers to pro-environmental behavior and encourage its adoption at work because it benefits individuals and individuals (Pinzone et al., 2019). Prior empirical studies on GT tended to be preoccupied with how it affected EP without considering the consequences for personnel.

The EP of banks was strongly impacted by environmental training, green policies adopted by banks, and the availability of energy-efficient equipment (Zhang et al., 2022). Thus, it can be claimed that businesses participating in G.B. activities and banks funding environmentally friendly projects are ways for banks to lower their carbon emissions, improve their EP, boost their brand, and achieve sustainable economic development (Haider, 2021).

The specific set of green capabilities that employees have learned impacts how well GT can improve Green environmental performance. According to a study, to improve green EP, organizations must actively participate in specialized and configured green staff training (Yafi et al., 2021). Prior studies have proved that GT and development are among the best Green Human Resource Management (GHRM) strategies for assuring the ongoing growth of green management in most organizations. Environmental or GT, which encourages employees and enables them to be more productive and dedicated to improving Green ecological performance, has been demonstrated to be one of the most crucial instruments for growing human resources. According to Yafi et al. (2021), there is an association between many components of GT and the improvement of staff members' environmental knowledge and attitudes. Furthermore, GT promotes a positive outlook and adopts a more deliberate approach to various greening projects, helping staff develop skills, minimizing waste, and conserving energy.

1.15 Sustainable Environment in the Banking Industry in Palestine

Sustainable development is an evolving, all-encompassing, and ongoing process that promotes social stability, economic progress, and resource conservation while improving living conditions and health. The banking sector is one of the financial structures that helps countries flourish, making it one of the crucial and significant sectors in contemporary countries. Thus, the banking industry contributes to fiscal, environmental, and social growth by offering various financial services to clients, including private citizens and corporate entities. The effectiveness of the banking sector varies from country to country depending on how new and developed it is, as well as how well it keeps up with regional, national, and international technological advancements when it comes to offering financial services to the public (Mhadhbi et al., 2020). Considering the changes taking place in the Palestinian banking sector with rapid steps towards improving the quality of banking services provided, Palestinian banks seek to rise to overcome the challenges that the banking industry must face to keep up with the advent of e-commerce and banking amenities and try to boost its competitiveness (Fintech, 2023).

According to the Palestinian Monetary Authority, the number of banks subject to supervision reached 13, representing a network of 378 branches and offices with 7,366 employees (PMA Annual Reports, 2023). The total development contribution of the banking sector amounted to 4,976,840 dollars through 618 partnerships with civil institutions, including the Association of Banks' contribution of 15,000 thousand dollars in the development sector. The financial contributions of the health and environment sector specifically amounted to 1,470,188 US dollars, to which 114 institutional partnerships contributed, which is the highest percentage of spending on the various developmental aspects (Singh et al., 2020).

The total contributions of banks during the past five years amounted to about $27,840,532, of which $10,409,946 was for environmental sustainability. Palestinian banks always try to follow whatever is innovative and successful in their industry. They also take great initiative in enhancing their positive reputation in the eyes of society by being aware of their social and environmental obligations (PMA, 2022). The banks think that sustainability management involving green banking, green initiatives, and sustainable projects is one of the most crucial strategies to accomplish this goal.

Although the banks recognize that they are moving in a greener direction and are aware of its significance, they also acknowledge that they still urgently need to carry out green plans, create plans to delegate a green strategy, set aside a portion of their funds to protect the environment, and schedule training sessions and meetings that demonstrate in some way what green management is as well as its effects and benefits on the banking industry as a whole (Zhixia et al., 2018). Banks recognize the value of people in their companies, and they feel that employing green strategies in managing human resources is one way to implement green management successfully. By utilizing a green strategy, the banks gain a competitive edge, which boosts their public image, motivates employees, and promotes customer loyalty to the bank.

Banks also adopt cost-effective lighting, lower power consumption, use less paperwork to lessen reliance on electronic communication between coworkers, and promote the usage of electronic bank accounts by clients. As much as possible, banks try to buy recyclable goods from suppliers to follow sustainability laws and regulations. Additionally, banks aim to offer digital services and utilize technology as much as feasible to be environmentally friendly.

1.16 Research Underpinning Theory

This study is informed by the resource-based view theory (RBV). Among organizational theories and paradigms used in management, RBV explains how an organization’s distinctive resources and assets ensure competitive advantage and success. It proposes that a firm’s forces and resources within the business space are as valuable as external forces. Drawing from the RBV, competitive advantage is considered most dependent on resources, which can be either tangible or non-tangible. As stated by Asadi et al. (2020), they might include manufacturing facilities and technology, patents, trademarks, business reputation, skilled employees, and organizational assets.

This study aims to establish the relationship between GIC and EP based on the RBV theory. Based on the RBV theory, the sources sustaining the company's competitive advantage and enhancing EP are GIC (GSC, GHC, and GRC), GI, and GT. The GI, GIC, and GT resources are green and give the business a long-term gain in achieving EP. Maximizing the implementation of GI by using GIC as the green resource and providing other initiatives to develop personnel skills through GT led to increased acceptance of green HR practices and outstanding EP. The application and incorporation of green

resources foster a sustainable green environment, reduce pollution, reduce water wastage, and minimize the wastage of paper products. Based on the RBV theory, this study reveals how applying practices, skills, and resources influences EP.

1.17 Research Hypothesis

The following hypotheses were developed based on the problem statement to answer and investigate the research questions.

H1: GT positively impacts EP.

H2: GT positively impacts GI.

H3: GT positively impacts GIC.

H4: GIC positively impacts EP.

H5: GIC positively impacts GI.

H6: GI positively impacts EP.

H7: GI mediates the relationship between GIC and EP.

H8: GIC mediates the relationship between GT and EP.

H9: GI mediates the relationship between GT and EP.

H10: GIC mediates the relationship between GT and GI.

1.18 Hypothesis Development

In familiarizing the connections between GIC, GI, GT, and environmental performance (EP) in the Palestinian banking industry, it is necessary to develop research hypotheses. Environmental training can be described as increasing employees' understanding of environmental conservation. Yavi et al. (2021) hypothesized that the GT approach leads to improved EP due to better training of employees and increased motivation. Reports from Kuo et al. (2022) revealed that organizations that adopt green HRM practices, such as GT, get increased innovation in environmental outcomes. Moreover, Wu et al. (2024) observed that environmental awareness training enhances intrinsic creative power, positively improving EP. Yadav and Mathew (2023) also state that GT increases sustainable performance within organizations. Therefore, we propose:

H1: Green Training (GT) positively influences Environmental Performance (EP).

GT helps employees learn new information and skills about sustainable business practices, which may enhance GI. Barakat et al. (2023) argue that GT improves green supply chain practices, leading to sustainable business benefits. Wu et al. (2024) also

indicate that firms enhance GI performance through environmental awareness training. Barba-Aragón and Jiménez-Jiménez (2024) hence claim that the knowledge generated by GT is essential for strengthening GI. In the same way, Jain and Kalapurackal (2023) demonstrate that GT has a positive effect on green manufacturing. Thus, we hypothesize:

H2: Green Training (GT) positively influences Green Innovation (GI).

Several studies have found that GIC may mediate between GT and EP. Haldorai et al. (2022) observed that GIC increases the mediating role of green HRM practices on EP. As supported by Asiaei et al. (2023) and Liu et al. (2022), GIC has the potential to enhance training-induced innovation leading to improved EP. Hence, we hypothesize:

H3: The influence of Green Training (GT) on Environmental Performance (EP) is positive.

Green intellectual capital, or GIC, is the knowledge, expertise, and human capital that firms employ to facilitate the use of environmentally friendly methodologies. Nicolaou et al. (2024) assert that GIC is essential in increasing sustainable and financial performance. GIC prefers to develop the organization's ability to effectively address economic and environmental objectives (Benevene et al., 2021). Asiaei et al. (2023) suggest that integrating GIC enhances the organization's ability to create and develop ecological innovations and improve its EP. In combination with the role of particle systems, it is possible to create an enhanced environmental performance relationship between GIC and the environment (Asiae et al., 2022). Hence, we propose:

H4: Green Intellectual Capital (GIC) positively influences Environmental Performance (EP).

Some research has demonstrated the relationship between GIC and GI. Some of the effects of GIC are that it helps integrate environmental objectives into organizations' innovation processes and thus come up with new environmentally friendly products and processes (Liu et al., 2022). From the point of view of Asiaei et al. (2023), there is evidence that executives in organizations with high GIC ratings are in a better position to drive green innovations related to sustainability. Also, Akhtar et al. (2024)

pointed out that absorptive capacity and innovation-friendly climate play an important moderating role in this relationship. Given this, we hypothesize that:

H5: Green Intellectual Capital (GIC) positively influences Green Innovation (GI).

GI can be defined as an innovation launched into the market to help reduce its negative environmental impact. Studies show that GI significantly improves EP by eliminating waste, improving resource utilization, and reducing pollution (Weng et al., 2015). Previous research has demonstrated a causal relationship between GI, corporate sustainability, and EP (Chen & Jiang, 2024). Furthermore, green initiatives can help reduce environmental threats and improve ecological outcomes (Liu, 2024). Cheng et al. (2024) further suggest that proactive companies in preventing pollution tend to be environmentally superior. Thus, we hypothesize:

H6: Green Innovation (GI) positively influences Environmental Performance (EP).

GIC has been shown to influence GI, which drives improved EP. Recent empirical evidence by Akhtar et al. (2024) and Asiaei et al. (2023) reveals that GIC enhances firms' innovation ability and improves EP. According to Liu et al. (2022), GIC, through GI, brings more environmentally friendly practices into the organization due to competition. Thus, we propose:

H7: Green Innovation (GI) mediates the influence of Green Intellectual Capital (GIC) on Environmental Performance (EP).

Thus, GIC is an essential link between GT and EP. According to Benevene et al. (2021) and Asiaei et al. (2023), the positive impact of GIC was found to enhance the ability of organizations to transform GT into innovation and EP. In this regard, GIC can leverage sufficient intellectual capital to transform training into positive and tangible actions that enhance the environment (Asiaei et al., 2022; Liu et al., 2022). Therefore, we hypothesize:

H8: Green Intellectual Capital (GIC) mediates the influence of Green Training (GT) on Environmental Performance (EP).

GT is the driving force behind GT programs, which have the potential to promote GI for better EP. As Kuo et al. (2022) hypothesized, green HRM practices, especially training, improve EP due to innovation. According to Wu et al., 2024, GT has shown that. GI performance is enhanced, and thus, environmental outcomes are improved.

Barakat et al. (2023) provide further insights that indicate that GT impacts green supply chain practices that determine ecological sustainability. Thus, we propose:

H9: Green Innovation (GI) mediates the influence of Green Training (GT) on Environmental Performance (EP).

Employees can participate in GI with the knowledge and capabilities that GT gives them, and GIC makes this process easier. According to Marco-Lajara et al. (2023), knowledge management enhances the relationship between GIC and GI performance since employees can improve environmental practices through training sessions. The hypothesis that GIC increases the impact of GT on firms' innovation efforts and produces more sustainable outcomes was confirmed by Asiaei et al. (2023) and Liu et al. (2022). Thus, we propose the following hypothesis:

H10: Green Intellectual Capital (GIC) mediates the influence of Green Training (GT) on Green Innovation (GI).

1.19 Conceptual Model

This section lays forth the model for the study by outlining the research topic, analyzing pertinent literature, and developing hypotheses. The researcher presents the study model as a road map for the upcoming chapters. The Resource-Based View (RBV) theory is the foundation for our study framework, which directs our investigation of the connections among GIC, GI, GT, and EP in the Palestinian banking industry.

1.19.1 Critical Components of the Research Model

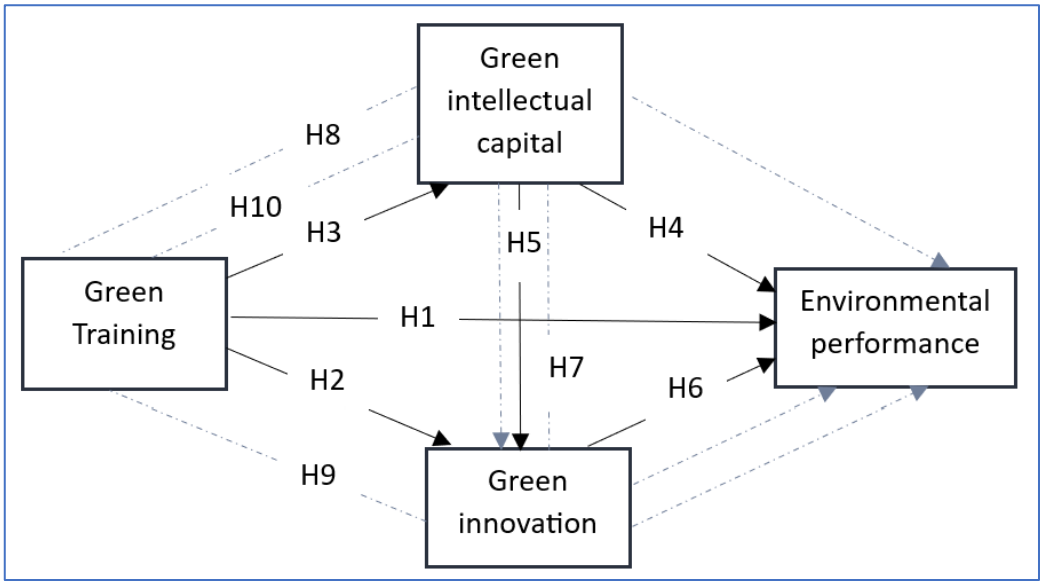
The research model consists of four main parts: GI, which includes the development of novel environmental practices; and GT, which provides knowledge and skills for green practices. GIC represents intellectual resources as green human, structural, and relational Capital within banks and EP, resulting from sustainable environmental actions within the Palestinian banking sector. The investigation of how these elements connect and their effects on environmental performance in the banking sector will be based on them.

1.19.2 Conceptual Model

This study of the Palestinian banking sector's EP is guided by this extensive research model, which strongly emphasizes GIC and views GI and GT. Figure 2 shows the conceptual model for this study.

Figure 2

Research Conceptual Model



Direct effect ——▶

Indirect effect ···▶

Chapter Two
Research Methodology

2.1 Overview

This chapter explains how the study examines the connections between GIC, GI, GT, and EP in Palestinian banks. It used a quantitative method. In other words, it collects and analyzes numerical data carefully. The study followed the Resource-Based View theory and a positivist approach that focuses on using concrete evidence. The research targeted executive heads and human resources managers in Palestinian banks. Measurements were taken with detailed scales and a well-designed questionnaire. Data analysis was done with Smart PLS software and structural equation modeling (SEM). Although there are some limitations, this chapter offers a deeper understanding of these complex relationships.

2.2 Research Type

This study is quantitative-exploratory, where exploratory research aims to explore new phenomena or when the subject of study itself is relatively new, where preliminary insights into existing phenomena are sought (Rubin & Babbie, 2008). The research questions also suggest an exploratory approach that examines the relationships between GIC, GI, GT, and EP in Palestinian banks. Although exploratory, this study used existing theoretical assumptions to guide the description, interpretation, and discussion of the connections between the variables studied (Casula et al., 2020). Working with the resource-based view theory, this study tested hypotheses and established causal relationships between the study variables through the objective and measurable means by which they collected experimental data. It uses a survey method to collect data, and in addition to this, it uses statistical analysis such as structural equation modeling (SEM), which aims to quantitatively examine the relationships between existing variables, as the study used.

2.3 Research Approach

The primary research methodology used in this study is deductive. Deductive reasoning involves examining existing theories and assumptions using empirical evidence. In this context, the research framework and hypotheses were based on principles such as the Resource-Based View (RBV) theory. Thus, this study employed a deductive approach to collect data from Palestinian banks to evaluate and validate these concepts (Nisar et al.,

2021). Since this branch of research focuses on hypothesis testing and identifying causal relationships among the key components, the deductive method aligns well with the study's quantitative nature. This research method examined how these factors are connected and helped us understand their effects on sustainability in Palestinian banks. The study used a positive approach. This fitted our goal of clearly showing how these four concepts are related and how they impact the environment in Palestinian banking. Positivism emphasizes using numbers and unmistakable evidence, which helps us evaluate our hypothesis accurately.

2.3.1 Quantitative Approach

The quantitative research technique that has been adopted while researching this study is essential to meet the study's objectives and interrogate or answer the questions posed by the study to correspond to the data that has been realized since this strategy entails the collection and analysis of digital data to conclude the relationship between the main factors in Palestinian Banks. These understandings are backed by statistical analysis, which is a significant strength in comprehending the relations between the variables. For several reasons, quantitative research is suitable for this investigation. Utilizing cross-sectional polls and questionnaires can facilitate the accurate assessment of the EP, GI, GT, and GIC (Yadav & Pathak, 2013). where, for hypothesis testing, it is crucial to have systematic measures. Mentions from the selected articles, both systematic and quantitative, are needed to obtain adequate and accurate data (Yadiati et al., 2019). It also enables checking on the strength and direction of the relationships of these variables (Yong et al., 2019).

Furthermore, quantitative research helps to analyze the influence of GT on EP through the moderating role of competencies and motivation (Yaffe et al., 2021). To obtain data about the quantitative type of the variables in consideration in this study, this study will adopt surveys of the people within Palestinian banks. Descriptive data analysis will be done using cross-tabulations and chi-square tests. For instance, the association between GIC, GI, GT, and EP will be analyzed using regression analysis. Thus, applying this method, this study will be able to reveal the correlations between these elements, following or opposing the specified research hypothesis.

2.4 Research Design

This research intended to evaluate the correlation between the four metrics, GIC, GI, GT, and EP, as applicable to Palestinian banks. They also followed an RBV philosophy that was well laid down in the research plan. It applied a straightforward procedure to assess concepts and discover their related elements. To obtain quantitative data, a quantitative research methodology must be adopted (Rouf, 2018). The questionnaire was distributed to the executives and HR managers in Palestinian banks, and 97 managers completed it. To ensure that the data was dependable, an oversampling technique was used. The survey focused on the sustainable environment's GI, GIC, and GT variables. Under the understanding of the association between these factors, Structural Equation Modeling (SEM), Smart PLS software was adopted to analyze the data collected.

2.5 Research Population

Therefore, the target population for this study will include the CEOs and human resource managers involved in the general and regional management of banks operating in Palestine despite having headquarters in Ramallah in the West Bank. These 160 people have top managerial jobs in many banks around the globe and from Palestine. Thus, they heavily influence their banks' strategies, direction, and allocation of funds to green projects. The researcher stands their ground on this by stating that all participants should have at least five years of working experience in their present organization so that they can be fully acquainted with the practices and the strategies of the Palestinian banking industry while at the same time possessing practical or relevant knowledge of the research area. Because this research seeks to find the perception of those with extensive experience in the industry, the target population is defined as those with this level of expertise.

2.5.1 Rationale for Selecting the Research Population

The arguments above are based on the idea that these professionals deeply understand the dynamics, practices, and interconnections of green practices in the banking industry. This is why human resource managers and executives were chosen as the target population for the study. They have essential information on implementing GIC, GT, and GI. Besides, they directly and indirectly impact EP in the Palestinian banking sector since they are key decision-makers and opinion leaders.

2.5.2 Exclusion Standards

People who do not meet the criteria, refuse to take the survey, and are not Executive Heads or Human Resources Managers at the selected banks were excluded from this study. Since the research aims to understand contemporary trends and get decision-makers views in financial organizations, the main focus was on opinions from people actively involved in making decisions and setting policies.

2.6 Research Sample Size

In reaching out to the respondents for this study, the sample size was estimated using Cohen's guidelines. Since the SEM method is used to analyze the relationships between factors such as GIC, GT, GI, and EP, it is essential to have enough participants to give satisfactory results. The study employed an oversampling plan to overcome such issues as participants dropping out or failure to respond. This means signifying more people than required to ensure the marketplace study had adequate participants who responded to surveys. This way, the study guaranteed that the number of participants was larger than recommended by Cohen in the PLS-SEM study (Rouf, 2018).

Based on available data on the number of human resources managers and executive positions within each participating bank, 160 potential participants were approached across the listed banks. This approach was adopted to ensure robust representation and to account for any potential non-responses, ultimately enhancing this study's reliability and the validity of its findings.

According to Cohen (1992), for Partial Least Squares Structural Equation Modeling (PLS-SEM). Appendix A shows the minimum sample sizes that should be used to get an 80% power level at 5%-significance levels and 25 minimum R-squared (R^2) values, which is 75. The table helps to determine the appropriate sample size based on the number of arrows (indicators or items) pointing at a construct in the PLS-SEM model, which is 6. A sample size of 97 participants, which concentrated on the Palestinian banking sector, was chosen for this study to strike a compromise between the necessity for rigorous analysis and practical limitations. This magnitude guarantees sufficient representation and facilitates significant deductions for the targeted population. Contacting 160 possible participants, followed by selecting 97 participants, exhibits a technique of affirmative contact given possible participant dropout and non-responders. Hence, the study plans to

maintain the statistical power and avoid data loss through this approach. For SEM research, the sample size is critical; however, this study's effectiveness also hinges on the model's complexity, significance level, and anticipated effect size.

2.6.1 Oversampling Technique

Oversampling is when researchers choose more people to participate in their study than they need. This is done to ensure that regardless of whether some people are not responding or the answers they provide are incorrect, there will still be enough to complete the objective set by the research. This meant that by inviting extra participants, the number of people who participated exceeded the number needed. This ensured the collected data was adequate, dependable, and accurate since the independent variable was measured using reliable and valid checklists (Rouf, 2018). Cohen's guidelines and the oversampling approach determined the number of participants.

2.6.2 Obtaining Statistically Sound Results

Oversampling procedures are employed to increase precision in the research findings and to have a true reflection of the research population. This approach also assists in the reduction of the hood of developing a small sample base for SEM analysis by addressing the problems of non-responses. Using this well-planned method, the study aims to provide valid and reliable information on the relationship between GIC, GT, GI, and EP in the Palestinian banking sector.

2.7 Development of the Questionnaire Measurement

Much forethought was put into designing the suggested questionnaire so that the part of the researcher would be provided with complete and meaningful data. The questionnaire had two sections, and they were as follows: the first part was intended to obtain general demographic data of participants. These were work experience, management experience, and education (MA, 2022). This was useful in aiding the researcher in developing a clearer picture of who they are. The second part focused on four main topics: Green Intellectual Capital, which represents the ability of an organization to produce environmental value and champion ecological stewardship; General Trend, which reflects the overall performance trend of the organization towards ecological sustainability GI; which exhibits the premium level of innovation of the organization concerning ecological management, and Environmental performance which measures the overall state of

sustainability of the organization about the environment. This part was created to obtain specific information on these issues.

This setup ensured that the questionnaire explored all the aspects of the participants' stand on some of the significant sustainable issues in their fields. The questions were to present their future and present activities concerning the green projects. The questions were as follows: This made the researcher know how they intended to solve global environmental issues. The questionnaire was constructed sensitively to introduce the entire perception and action concerning sustainability at work. It also aided the researcher in identifying the relationships between management roles, education, and green practices.

2.7.1 Questionnaire Design and Procedure

The questionnaire for this study was carefully created to evaluate our hypothesis and gather information on green factors like GIC, GI, and GT, as well as how they affect environmental sustainability. It was available in Arabic and English to suit the language needs and diverse backgrounds of participants in the Palestinian banking sector.

2.7.2 Green Intellectual Capital (GIC) Measurement

The research sought to answer the question of how crucial GIC is to Palestinian banks. GIC has three parts: GSC, comprised of technology and infrastructure that supports GI; GHC, the skilled workforce that supports and promotes green initiatives; and GRC, marked by the networks that support green practices. To assess these parts, we made a set of questions. All questions were adapted from (Bontis, 1999; Johnson, 1999; Dzinkowski, 2000; Edvinsson & Malone, 1997; Roos & Roos, 1997; Stewart, 1994; Chen, 2008). To get the numerical measure of each part, the participants were given each part rating on a scale of 1-5, where one was equivalent to 'very low' and five was equal to 'extremely high. The questions were framed to capture the existing situation in Palestinian banks, and the choice of words was made based on the findings of the previous similar research to match the Palestinian situation.

2.7.3 Green Innovation Measurement

The other distinctive component incorporated in this study was GI. We administered a set of well-developed questions to assess GI. These included creativity and environmental issues in Palestinian banks (Nisar et al., 2021). Respondents were asked to express their

satisfaction with their banks regarding implementing GI. They gave their impression on a Likert scale of 1 to 5. To ensure that the questions obtained from these sources met the study's objectives, they were adapted from (Wang et al., 2020).

2.7.4 Green Training Measurement

In their bid to remain sustainable, GT is a vital component that organizations cannot afford to ignore. All the indicators of GT were adapted from (Daily et al., 2012; Teixeira et al., 2012b; ISO 10015, 2001; ISO 14001, 2004). In the questionnaire used, we included a part to evaluate how the concept of GT was applied in the Palestinian banks. Respondents were then asked to express their extent of awareness of the GT practices on a 5-point scale that assessed how much their banks employed GT practices. This rating assisted in determining the match of the GT policies of the banks to the intended goals of the research and how they transcend the minimum standards.

2.7.5 Environmental Performance Measurement

These questions were held to determine participants' perceived attitudes regarding sustainability and how GIC, GI, and GT contribute to the sustainability of Palestinian banks. Based on the literature review of the Palestine banking environment, we changed the questions accordingly. All the indicators of the EP were adapted from (Asadi et al., 2020; Ojo et al., 2022). The questionnaire was developed to capture features of the unprecedented situation that characterizes the Palestinian banking industry at the current time. This drew attention to GIC, GI, and GT and the differences they can bring to sustainability. This was in line with the questions formulated to allow the hypothesis validity test to be conducted and ascertain how to deal with the result.

2.8 Measurements

This study used detailed questions to measure four crucial factors in Palestinian banks: GIC, GT, GI, and EP. This method helped us ensure that our data was dependable and accurate. The questions were carefully checked and adjusted to fit the specifics of the banking industry. This ensured they were relevant to the research. Experts were consulted to confirm these adjustments. Any changes to the scales were carefully recorded. The GIC was measured in three parts with fourteen questions. These parts were GSC, GHC, and GRC. The EP was measured with eleven GI and GT, each with eight or ten questions.

The questionnaire used a scale from one to five, where one means "strongly disagree" and five means "strongly agree."

2.9 Data Collection

The researcher emailed and met with the chosen banks to explain the study and see if they wanted to participate. These early conversations set the stage for the next step in collecting data. Initially, an attempt was made to increase response rates and interest by creating an online questionnaire in Arabic and English. Since the initial distribution period lasted for three weeks, reminder emails were sent to emphasize the importance of the banks' participation. This initiative-taking strategy was designed to reduce data incompleteness and improve response rates. The researcher conducted the survey personally and visited each bank because the survey was detailed and the information was sensitive. This method ensured the responses were complete and accurate and kept the data dependable.

Furthermore, nine out of 106 questionnaires were excluded to ensure the data's quality and accuracy. We removed surveys with incorrect or inconsistent answers. After this careful process, 97 questionnaires were deemed suitable. Some responses had inconsistencies, especially regarding the bank’s environmental certifications. We removed these inconsistent responses to keep the data dependable and credible (Zahra et al., 2022). No unique methods were used to manage missing data. The main goal was to ensure the accuracy and relevance of the dataset by excluding responses that did not meet the study’s criteria.

2.10 Data Analysis

This study employed advanced techniques in data analysis to arrive at meaningful insights. The primary tool used was SEM because it is precise, flexible, and can manage complicated prediction models easily.

In this study, SEM was used to evaluate the research hypotheses and assess the simultaneous effect of the study variables. SEM was beneficial because it enabled the analysis of intricate relationships between latent variables. Partial Least Squares Structural Equation Modeling (PLS-SEM) and Covariance Structural Equation Modeling (CB-SEM) are two common approaches for examining complex relationships among variables. For this study, PLS-SEM was adopted due to its associated advantages. First,

PLS-SEM was suitable for dealing with complicated patterns. This made it worthwhile for complex research data. It could manage various data and measurements (Zahra et al., 2022). Second, it was more convenient for building and testing research models. PLS-SEM is an effective data analysis method (Ringle et al., 2015). It is well known for being amazingly effective in evaluating complicated models and has been successful in research using small samples. On the other hand, CB-SEM was preferable in some situations but less flexible when the specific requirements of its data were not satisfied. In addition, it is usually challenging to sample small samples or distribute data.

Chapter Three
Data Analysis

3.1 Chapter Overview

This chapter presents the results of this research by incorporating the demographic data analysis, reliability and validity statements, and hypothesis testing sections. There are several ways the researchers' obtained data. For example, In the Palestinian banking sector, the Palestinian Banking Association targeted human resource managers and evaluations in other departments, with participants mostly being managers. This chapter is divided into different sections. First, the researcher will examine response rates combined with their profiles and proceed to data screening, preliminary analysis, and analysis of sample characteristics. The last artery unveils the results of the conducted reliability and validity evaluations and the applied measurement methodology. Finally, this research outlines the results of the hypothesis tests together with a determination of the coefficients, the estimated measures of the effects, and the forecasting significance of this study. This synthesis chapter summarizes information and knowledge gathered in this study, specifying the complex aspects of the research.

3.2 Response Rate

The response rate for a study is a crucial factor that determines the level of accuracy in terms of the data collection process and the involvement of the participants. In recruiting the participants, the study used formal letters from the research institution and introduced messages to seek the cooperation of key informants. These included executive heads and human resource managers from the Palestinian banks based in the West Bank area of Palestine, with a target of at least 160 employees. One of the objectives was to ensure a high response rate to increase the viability. The primary sources of data collection were questionnaires, which were posted online in both English and Arabic. The motivation to participate was further enhanced by features found in emails and phone calls. Personal visits to the banks were also conducted to ensure the participants fully attended and established a relationship with volunteers.

Evaluation of the data collected revealed that the actual response rate was (60%). This represents the number of people who participated in the study. Despite the high efforts to consciously recruit participants, this adjusted response rate reflects the substantial number

of individuals who willingly participated in this research. It reflects the collected data's accuracy and the findings' reliability. Hence, the results and conclusion of the study are enhanced by participants' engagement and commitment, which contributes to the accuracy of the research done. Out of the 160 questionnaires that were distributed, 106 questionnaires were filled in and returned by the students. After reviewing and correcting the responses, 97 surveys were accepted, resulting in an adjusted response rate of 60% and a modified completion rate of about 91.5%. This adjusted number correlates with the number of people eligible for the study. The high response rate revealed that most of the target population was willing to participate in the survey, and hence, this affirmed the usefulness of the results in painting an accurate picture of the Palestinian banking industry. Confidence was, therefore, instilled in the researchers who could not proceed with the results to the next level.

3.3 Respondents' Demographic Information

Much of the data is derived from replies from different Palestinian Banking Association management levels. This data set provides a directory view of the banking sector since it includes the perceptions of varying management employees, such as deputy directors, branch managers, administrative managers, and human resource managers. It is supported by the opinions of thirteen other bank members of the Palestinian Banking Association, contributing to the research's richness. To make this possible, the researcher sent requests to management employees in the organization. Thus, the letter served as a carefully thought-out prologue that defined the purpose of the research along with its significance, hence achieving the passivity of the banks that participated in the study.

A total of one hundred and sixty self-administered questionnaires were distributed by the study team through emails and over the Internet with the help of Google Forms as the principal data collection tool. This methodological decision allowed respondents to fill in the questionnaire conveniently while facilitating the overall survey process. Also, despite the challenges encountered when conducting survey-based research, 78% of the responses were obtained adequately by carefully applying the data collection and analysis process. Indexing the level of response underscores the respondents' involvement and cooperation and affirms the researcher's interaction. The level of participation thus enhances the quality and the validity of the information gathered. Importantly, this research entails changes those participants made to the descriptive information section,

suggesting that clients can respond to altered conditions. The researcher pays attention to the fact that the data presented accurately represents the current trends of the managerial positions in the analyzed banking industry and acknowledges the importance of these changes in providing the study results.

In summary, Table 1 presents the demographic analysis of the participants. The results are more dependable and pertinent because of the meticulous diligence and consideration of participant feedback. These elements also provide crucial context for understanding managerial practices in the Palestinian banking sector.

Table 1

Demographic Analysis of Bank Employees

Demographic Variable	Category	Frequency	Percentage (%)
Academic qualification	Bachelor	44	45.36%
	Postgraduate	53	54.63%
	Total	97	100%
Number of years of experience	6-10 years	31	31.95%
	11-15 years	39	40.21%
	Over 15 years	27	27.83%
	Total	97	100%
The nature of work in the bank	Banking Operation Manager	11	11.34%
	Regional Director	5	5.15%
	Financial Administrative Manager	12	12.37%
	Human Resource Manager	12	12.37%
	Relation and Cooperation Manager	10	10.31%
	Risk Management Manager	12	12.37%
	Planning and Development Manager	11	11.34%
	Compliance Monitoring Manager	9	9.27%
	Director of Digital Transformation Department	5	5.15%
	Strategy and Projects Manager	10	10.31
	Total	97	100%

In this section, the researcher presents a comprehensive summary of the demographic characteristics of the research participants, focusing on their educational backgrounds and job histories. The findings provide valuable insights into the diverse demographics of the participants within the Palestinian banking industry.

3.3.1 Educational Qualifications

As the modified results in Table 2 indicate, participants' educational levels show that the subject's academic performance is diverse. Remarkably, (36%) of participants declare a bachelor's degree, which means reasonable academic performance in the banking industry. Additionally, the majority of participants, (63%), affirmed that they had taken postgraduate courses, which is proof of their devotion to upgrading their educational standards in the field. These aspects play a crucial role in creating a diverse pattern of academic achievement among the participants**.**

3.3.1.1 Years of Experience in the Field

The findings of this research offer a detailed understanding of the participants' development process concerning a rich set of banking-related competencies. About (31.95%) of respondents are early–career professionals with 6–10 years of experience, thus being categorized as the young and active group in the workplace. Participants' work experience profile revealed that 95 % of the cohort's participants had 6 to 10 years of experience, implying that this group is well-connected in their careers. Notably, a high percentage of (40.21%) indicates that they have 11–15 years of experience, which proves the presence of experienced specialists to support the sector. Moreover, it is revealed that (27.83%) of all participants mentioned that they had worked in the banking industry for more than 15 years, indicating a high degree of proficiency and stability in their positions.

3.3.1.2 Nature of Employment

Experience has shown that specialists are occupied with different tasks in the context of the constantly evolving sphere of banking. The research pointed out that about 12.37% of the respondents were Financial Administrative Managers, Human Resources, and risk management managers. In addition, 5.15 % of respondents indicated that they occupied the regional director's posts, were responsible for making decisions, and performed leadership activities in the banking industry of Palestine. Thus, this detailed study analyzes several job categories to reveal the various occupations in the given area. The study showed the statistics as follows: Managers of banking operations at (11.34%), Relation and Cooperation Managers at (10.31%), Planning and Development managers at (11.34%), Compliance Monitoring Managers at (9.27%), Director of Digital Transformation Department (5.15%) and Strategy and Projects Manager (10.31%) are some of the most mentioned roles. This range of positions, therefore, provided a holistic understanding of the multifaceted factors affecting the labor market in Palestine's banking industry.

Table 2

Respondents Profile

Demographic Variable	Category	Frequency	Percentage
Does your business adopt environmentally friendly practices?	Currently used	43	44.32%
	Plan to use it within twelve months	19	19.58%
	There are no plans to use it currently	15	15.46%
	Plan to use it over twelve months	13	13.40%
	Not sure	7	7.22%
	Total	97	100%
Does the bank have an official certificate related to preserving the environment?	currently have	22	22.68%
	There are no plans to have it currently	14	14.43%
	Plan to have it over twelve months	18	18.55%
	Plan to have it within twelve months	17	17.52%
	not sure	26	26.80%
	Total	97	100%

Table 2 shows the critical findings on important study indicators of the banking sectors about their practices in the environment. From our study, (44%) of the respondents believed gadgets like phones should be eliminated. Currently, (32%) of banks practice eco-friendly procedures, which is quite an appreciable commitment towards such projects. This exemplifies the Palestinian banking sector's appreciable concern towards the depletion of natural resources.

Furthermore, (19.58%) of banks stated that it would be impossible to continue with the green activities until the following year. This threatens the need to promote increased environmental consciousness. In addition, (19.58%) of banks indicated that they plan to implement environmentally friendly practices in the upcoming year, demonstrating ongoing attempts to increase environmental responsibility. Conversely, (7.22%) of participants expressed hesitancy regarding using these techniques, indicating avenues for more investigation and learning. Additionally, (14.43%) of banks now have no immediate

intentions to implement environmentally friendly practices, but (13.40%) expect to do this in the long term, expressing their dedication.

This study sheds light on the state of formal accreditation for environmental preservation in the banking sector. Remarkably, (22.68%) of banks have attained official certification, indicating to the public their dedication to environmental management. However, as (26.80%) of respondents are unclear if their businesses have such accreditation, there is a need for clarity and communication. Furthermore, (14.40%) of clients responded that they do not plan to acquire official certification due to other priorities or pragmatic reasons.

In the same survey, (55%) of the participants said they are likely to pursue certification over a longer horizon, meaning their future in engaging in other environmental projects. In addition, (17.52%) of them stated that they wish to get certified in the current year; this indicates a timely attitude towards certification training among learners. This information provides an overall review of the environmental certifications and the strategies that banks in Palestine have adopted so that their various departments could use them to identify areas that require enhancement and accomplishments.

Why SMART-PLS

As can be deducted from the definitions above, SEM and path modeling are significant research tools in various fields. They assist in the analysis of relationships between the aspects and the hypotheses that are being evaluated. For this reason, these techniques may be applied as needed for various research goals because of the benefits of the approaches. Path modeling or partial least squares structural equation modeling techniques, also known as PLS-SEM, are helpful in hypothesis testing (Ringle et al., 2015). This method helps you explore the relationship between obvious and disguised components. If causality correlation with latent variables is considered, PLS-SEM is very handy. Also, it is considered dependable and accurate at providing confirmatory factor analysis.

PLS-SEM is not domain-specific; it has been applied in business, marketing, management information systems, and family business research. It offers flexibility whenever the data is non-normal and can be true in many scenarios(Ammad, 2021). It may also examine the relationship between the latent variables and items, making a model easily understandable by the researchers. Thus, that advantage and the ability of PLS-SEM to work better with

lower sample size, non-normal distribution, and the need for prediction are among PLS-SEM's strengths. It is a robust option for those researchers who are faced with these kinds of challenges. Nonetheless, it is applicable when the sizes of samples have reached exceptionally large and when great proportions of the data possess non-normal characteristics. Also, it can manage models with fewer numbers of endogenous latent variables; however, they can have numerous external latent variables (Ammad, 2021)

One crucial feature of PLS-SEM that distinguishes it from earlier regression models is the examination of mediation and moderation. It is also more flexible in examining moderating effects because there are no restrictions on the interaction approach that may be used. Researchers place significance on the capacity to construct complex models with complex relationships, mediation, effect chains, and other aspects (Rouf, 2018). Researchers use tools like Smart PLS 4.0 to compute inner and outer models in PLS-SEM. This method has a wide range of applications, making it helpful for research in the social sciences, marketing, and strategic management, among other fields.

3.4 Treatment of Missing Data

When employing Smart PLS to analyze the given data set in this research study, some missing data should be addressed to maintain data validity. To deal with this problem, the researcher applied list-wise deletion, a part of Smart PLS's managing procedure. Any missing information was excluded from the results. It ensured that all the available data was heavily utilized in the precise statistics analysis. However, one must remember that this research recorded an extraordinarily small amount of data loss in the first place and was conducted with much care and rigidity, which amplifies the reliability of the findings.

3.5 Evaluation of PLS-SEM Results

Consequently, this section outlines an application of PLS-SEM analysis appropriate to the peculiarities of the employed variables and study objectives. The developed method presupposes their screening and verification to enhance the quality of the collected data. Following that, the researcher considers one of the most critical procedures in the study, the measurement model analysis, and distinguishes between the measurement model and the structural model, which are the two fundamental models (Nitzl, 2016). The outer model's purpose is to assess the quality of the measurement of the latent constructs for relations established between the immeasurable and measurable variables to make a

comparison. This phase aims to prove that such conceptions are indeed valid and dependable. Estimating the effect of the structural links between the latent variables is the subject of the inner model analysis; PLS-SEM is used to establish causal relationships (Li, 2020).

Also, this research contributes to the methodological area by focusing on the model setup in the PLS-SEM context. To enable a thorough analysis of the reflective and formative factors involved, the researcher ensures that the model's content is easily comprehensible before going any further in the work. While formative variables comprise indicators that collectively define the concept of the formative construct, reflective variables relate to measures linked to a formative construct. Of course, the type of data collected can be based on this differentiation, and it is based on it that we evaluate our measuring model (Al-Emran et al., 2018).

They also include second-order constructs that generate hierarchical elements within our research and increase model complexity. Our research provides GI, GIC, and GT variables to develop this study’s analysis that posits the relations between these components systematically to reach the endogenous variable of interest, environmental performance.

3.5.1 Multi-Collinearity Test

The variance inflation factor (VIF) is a statistical test that measures the degree of multi-collinearity while working with the multiple regression analysis test. Collinearity statistics are critical for assessing indicators' redundancy in the PLS-SEM research model. High VIF values suggest potential multicollinearity issues, which can distort the model's estimations. Generally, a VIF value exceeding 5 indicates a possible problem with multicollinearity. Below is a detailed report of the model collinearity analyses in our study. Large VIF numbers indicate the presence of multi-collinearity, which is undesirable because it causes significant standard errors of coefficient estimates, and hence, the realization of the regression model becomes incredibly challenging. Typically, a VIF regarded as potential trouble is one over 10, while those under five are considered acceptable (Hair et al., 2017).

Environmental Performance (EP): The analysis shows that the VIF statistics for all six EP items, namely EP 1 to EP 6, is below 5, with the values ranging from 2.134 to 2.894. This implies that the degree of multi-collinearity among the EP items is moderate and, therefore, acceptable.

3.5.1.1 Green Innovation (GI)

The VIF values for all GI items (GI 2, GI 4, and GI 7) are below 5, ranging from 2.315 to 3.23. This indicates that multi-collinearity among the GI items is also within an acceptable range.

3.5.1.2 Green Training (GT)

The VIF values for GT items (GT 1 to GT 5, GT 10) range from 1.956 to 2.443, as shown in Table 3, indicating acceptable levels of multi-collinearity. The VIF values obtained from the outer model indicate that multi-collinearity is not a significant concern in the research model. All VIF values are well below the threshold of 10, with average values close to 2.5, suggesting little to no multi-collinearity among the variables.

Table 3

Collinearity Statistics – Outer Model

Items	VIF
EP 1	2.512
EP 2	2.514
EP 3	2.894
EP 4	2.134
EP 5	2.634
EP 6	2.335
GI 2	3.218
GI 4	3.230
GI 5	2.315
GI 6	2.449
GI 7	2.753
GT 1	2.333
GT 10	1.956
GT 2	2.391
GT 3	2.443
GT 4	2.232
GT 5	2.278

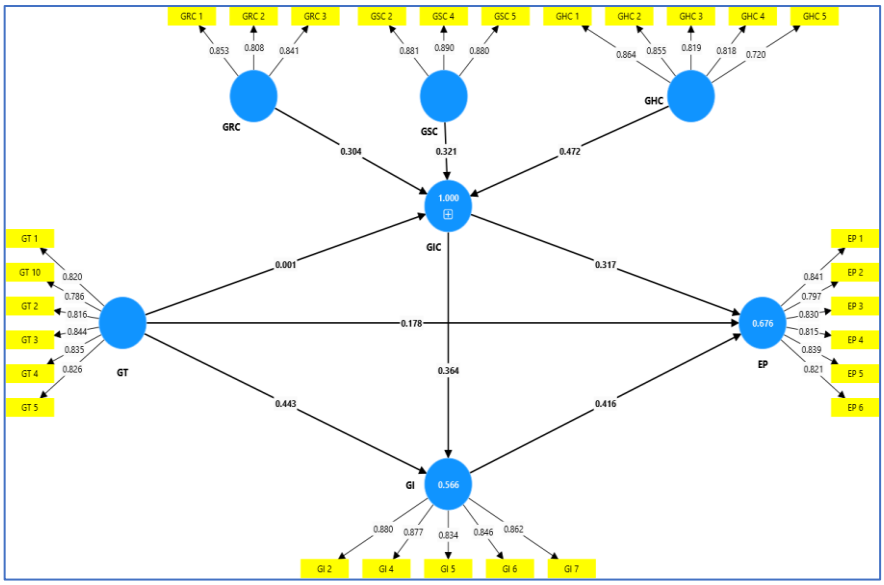
3.5.2 Measurement Model

The measurement model is essential to check the validity and reliability of the construct. Evaluation of the measurement model, which contains the measurement items and their connections to the associated latent variables, is a crucial stage in PLS-SEM analysis (Hair et al., 2011).

Convergent validity tests and discriminating validity tests are part of the evaluation of the measurement model. Based on the measurement model results, the reliability and validity of the constructs used in the research were assessed through Cronbach's alpha, composite reliability (rho_a and rho_c), and average variance extracted (AVE). Further, the discriminant validity of constructs was also measured using the Heterotrait-Monotrait (HTMT) ratio and the Fornell-Larcker criterion. The constructs evaluated include EP, GHC, GI, GRC, GSC, and GT. Figure 3 illustrates the measurement model for this study.

Figure 3

Measurement model



3.6 Reliability and Validity

The reliability and convergent validity were assessed using Cronbach's alpha, factor loadings, CR, and AVE. As shown in Figure. Three and Table 4, all the construct's Cronbach's alpha values are beyond the recommended level of 0.70, meaning that the work's internal reliability was adequate. Additionally, all factor loadings surpassed the recommended threshold of 0.70. Similarly, all CR values exceeded the suggested benchmark of 0.70 (Hair et al., 2019).

Furthermore, the AVE values for the constructs were above the recommended threshold of 0.50 (Hair et al., 2019). Thus, our study also met this criterion. This implies that most of the variance of the indicators is explained by the constructs. All the constructs in the measurement model show elevated internal consistency and convergent validity levels, indicating great reliability and validity overall. This offers a solid basis to additional investigation into the connections among GI, GT, green intellectual capital, and EP.

Table 4

Construct's Validity and Reliability

Variable	Cronbach's alpha	Composite reliability(rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EP	0.905	0.908	0.927	0.679
GHC	0.874	0.881	0.909	0.667
GI	0.912	0.913	0.934	0.740
GRC	0.781	0.787	0.873	0.695
GSC	0.860	0.860	0.914	0.781
GT	0.904	0.906	0.926	0.675

Note: Environmental Presentation (EP), Green Human Capital (GHC), Green Invention (GI), Green Relational Capital (GRC), Green Structural Capital (GSC), and Green Training (GT).

3.7 Discriminant Validity

The idea of discriminant validity describes how different a study's measurement variables are from one another. The discriminant validity is important in research to ensure that constructs are distinct (Hair et al., 2016). Without adequate discriminant validity, inflated correlations can occur between constructs that are too similar, potentially compromising the validity of the findings. Numerous techniques can be used to evaluate discrimination's validity in this situation. The results from the measurement model are shown in the following table with the Heterotrait-Monotrait (HTMT) ratio of correlations. All the HTMT values are less than 0.90 (Henseler et al., 2015), which lends the discriminant validity criteria between the constructs. In summary, All HTMT correlations were below 0.90, as illustrated in Table 5, which presents the full results of the measurement model. Therefore, our study met this criterion.

Table 5

Heterotrait-Monotrait Ratio (HTMT)

	EP	GHC	GI	GRC	GSC
EP					
GHC	0.705				
GI	0.832	0.696			
GRC	0.884	0.869	0.799		
GSC	0.728	0.875	0.668	0.872	
GT	0.773	0.687	0.778	0.847	0.802

Note: Environmental Performance (EP), Green Human Capital (GHC), Green Innovation (GI), Green Relational Capital (GRC), Green Structural Capital (GSC), and Green Training (GT).

On the other hand, the criterion Fornell-Larcker values for the constructs included in the model, such as EP, GHC, GI, GRC, GSC, and GT, are shown in Table 6. The diagonal value (in bold) is the square root of the AVE for the respective construct, whereas the other part of the AVE matrix pertains to the correlations between the different constructs. The Fornell-Larcker criterion results indicate that each construct in the model demonstrates good discriminant validity.

Table 6

Fornell-Larcker Criterion

	EP	GHC	GI	GRC	GSC	GT
EP	0.824					
GHC	0.634	0.817				
GI	0.762	0.621	0.860			
GRC	0.745	0.723	0.674	0.834		
GSC	0.647	0.763	0.593	0.717	0.884	
GT	0.707	0.615	0.708	0.715	0.709	0.821

Note: Environmental Presentation (EP), Green Human Capital (GHC), Green Innovation (GI), Green Relational Capital (GRC), Green Structural Capital (GSC), and Green Training (GT).

3.8 Formative Indicators (Significance and Relevance)

In examining the higher-order construct validity for GIC, the VIF for GHC, GRC, and GSC are below 5 (Hair et al., 2011), so multicollinearity is not a problem in this model. The outer weights are the degree of contribution of the measured variables in creating the higher-order construct. If the item weight magnitude is greater than 0.10, then the item weight is considered significant (Andreev et al., 2009). From Appendix E, GRC contained the highest outer weight of 0.631, which revealed that this factor is most closely related to GIC. The significance of the outer weights is assessed through *t* statistics and *p* values. The outer weight for GRC is highly significant ($t = 4.128$, $p = 0.000$), indicating a solid

contribution to GIC. GSC is also significant (t =2.118, p = 0.034), while GHC is not statistically significant (t = 0.913, p =0.361), suggesting its contribution to GIC is not as strong. If the indicator weight is insignificant, the outer loading indicates the direct contribution of each dimension to GIC. GRC shows a next-high outer loading of 0.959, followed by GSC with 0.875 and GHC with 0.839.

All loadings are above the threshold of 0.5, confirming that each dimension reliably contributes to the construct of GIC. Overall, the Smart PLS analysis results confirm the construct validity of GIC as formed by GHC, GRC, and GSC. GRC is the most crucial of these dimensions in influencing the model and completely validates the context by displaying a highly significant outer weight and an inner loading for the outer weight of the highest score. Relational areas like external sources and relations are important in understanding GIC. GSC also plays a key role in GIC, focusing more on the structure of the systems.

3.9 Structural Model

The relationships between the latent variables in the structural model are described by the path coefficients, which indicate the strength and direction of the associations between each pair of latent variables (Hair et al., 2016). This section explains some statistical techniques for assessing how well the model fits.

To assess the appropriateness of using the multi-collinearity technique for the structural model, the possibility of multi-collinearity was checked with the help of VIF values for each of the predictor constructs was estimated. Based on Table 7, the findings also reveal that the values of the VIF for the paths are below the cut-off value of 3.3 (Diamantopoulos & Siguaw, 2006). Thus, multi-collinearity is not an issue for listed relationships. These results suggest that the predictor constructs in the model do not have much interaction effects. Consequently, no additional corrective actions regarding multi-collinearity are necessary regarding this chosen structural model. These results improve the robustness of the model estimates so that the regression coefficients are not biased while the standard errors are not inflated because of multi-collinearity. Therefore, understanding the direction of causality makes it possible to confidently analyze the relationship between the independent variables and GI and their influence on the dependent variable EP.

Table 7

Collinearity Statistics–Structural Model

Relationship	VIF
GI->EP	1.965
GIC->EP	1.965
GIC->GI	2.386
GT->GIC	1.000

Another highlight of this study is measuring the Structural model's fitness with specific reference to Smart PLS, which has the following significant statistics. The Standardized Root Mean Square Residual (SRMR) values of the saturated and estimated Models are 0.066 and 0.067, respectively. These values are lower than the standard 0.08 (Hu & Bentler, 1998), which shows adequate adjustment of the hypothesized model to the inspecting data. The structural model demonstrates a good fit, as shown in Table 8.

Table 8

Model Fit Statistics

	Original sample(O)	Sample mean (M)	95%	99%
Saturated model	0.066	0.057	0.078	0.089
Estimated model	0.067	0.061	0.083	0.094
	Saturated model	Estimated model		
SRMR	0.066	0.067		
d_ULS	0.905	0.929		
d_G	0.836	0.844		
Chi-square	392.942	394.109		
NFI	0.774	0.774		

The R-square values indicate the proportion of variance in the dependent variables explained by the independent variables. Specifically, the R-square value for EP is 0.688, with an adjusted R-square of 0.678, suggesting that approximately (68.8%) of the variance in EP can be accounted for by the combined effects of GIC, GT, and GI. For GI, the R-square value is 0.566 with an adjusted value of 0.556, indicating that GIC and GT explain (56.6%) of the variance in GI. The R-square value for GIC itself is 0.581, with an adjusted R-square of 0.576, showing that (58.1%) of the variance in GIC is explained by its dimensions: GHC, GSC, and Green Relational Capital (GRC).

On the other hand, the f^2 values provide information on the effect size of each predictor construct in the structural model. Cohen's (1988) guidelines suggest that f^2 values greater than 0.02, 0.15, and 0.35 indicate small, medium, and large effect sizes, respectively. An

f^2 value of 0.220 for GI suggests that GI has a medium effect on EP. Also, the f^2 values for GIC are 0.176 on EP and 0.139 on GI, indicating that GIC has a moderate effect on EP and a small effect on GI. In comparison, the f^2 values for GT are 0.019 on EP and 0.172 on GI, implying that GT has a small effect on EP but a medium effect on GI.

Additionally, the f^2 value of 1.386 for GT on GIC indicates a large effect size, highlighting the considerable influence of GT on GIC. Finally, Q^2 values for EP, GI, and GIC were 0.491, 0.493, and 0.556, respectively. As a general guideline, Q^2 values greater than 0 indicate the predictive accuracy of the structural model for that construct. These values fall in the range of medium and large predictive relevance (Cohen et al., 2000). These values indicate the substantial effect of GT.

3.9.1 Hypothesis Testing

The study's variables exhibit numerous noteworthy linkages, as revealed by the path analysis results of the hypothesis testing. These relationships shed light on the complex dynamics between GIC, GT, GI, and EP. First off, in contrast, GT's direct effect on EP is not significant (β = 0.13, t = 0.872, p = 0.383), implying that training alone may not directly influence EP, so H1 is not supported. However, GT significantly impacts GI (β = 0.422, t = 2.557, p = 0.011), indicating that training fosters innovation. Hence, H2 is supported. Moreover, GT strongly affects GIC (β = 0.762, t = 10.531, p < 0.001), highlighting that training enhances intellectual capital, so H3 is supported. Furthermore, GIC also directly contributes to EP (β = 0.386, t = 3.248, p = 0.001), underscoring the importance of intellectual capital in achieving better environmental outcomes. Therefore, H4 is supported. Furthermore, GIC significantly drives GI (β = 0.379, t =2.38, p = 0.017), suggesting that intellectual capital fosters innovation, improving EP, so H6 is supported. In addition, GI has a solid and significant direct influence on EP (β = 0.397, t = 3.031, p = 0.002), suggesting that GI improves EP directly; thus, H6 is supported.

Examining indirect effects, GIC indirectly influences EP through GI (β = 0.150, t =2.236, p = 0.025), which means that GI partially mediates the relationship between GIC and EP; therefore so H7 is supported. On the other hand, GT indirectly impacts EP through GIC (β = 0.294, t = 2.86 t 5, p = 0.004), which means that GIC completely mediates the relationship between GT and EP, so H8 is supported. Moreover, GT indirectly does not impact EP through the GI pathway (β = 0.168, = 1.689, p = 0.091), meaning GI does not

mediate between GT and EP. Therefore, H9 is not supported. Additionally, GT indirectly influences GI through GIC (β = 0.289, *t* = 2.283, *p* = 0.022), reinforcing the role of GIC as a partial mediator in the relationship between GT and GI. Therefore, H10 is supported.

Lastly, the study accredits GIC and GI in integrating EP improvement; hence, GIC is a significant determinant for innovation and performance. While GT does not directly impact EP, it significantly strengthens GIC and GI and positively influences EP. The aggregation of these results emphasizes the need to encourage GIC and innovation towards a higher level of EP through professionalism in special training programs. Table 9 illustrates the path analysis generated from the Smart PLS software.

Table 9

Results of Bootstrapping

Relation	Original sample (β)	Sample mean(M)	Standard deviation	*t* statistics	*p* values	Decision
GI-> EP	0.397	0.380	0.131	3.031	0.002	Supported
GIC->EP	0.386	0.422	0.119	3.248	0.001	Supported
GIC->GI	0.379	0.379	0.159	2.380	0.017	Supported
GT-> EP	0.130	0.101	0.149	0.872	0.383	Not Supported
GT->GI	0.422	0.420	0.165	2.557	0.011	Supported
GT->GIC	0.762	0.761	0.072	10.531	0.000	Supported
Indirect						
GIC->EP	0.150	0.136	0.067	2.236	0.025	
GT-> EP	0.577	0.594	0.141	4.102	0.000	
GT->GI	0.289	0.289	0.126	2.283	0.022	
Specific						
GIC-> GI-> EP	0.150	0.136	0.067	2.236	0.025	Supported
GT->GIC ->EP	0.294	0.323	0.103	2.865	0.004	Supported
GT->GI->EP	0.168	0.167	0.099	1.689	0.091	Not Supported
GT->GIC->GI	0.289	0.289	0.126	2.283	0.022	Supported

Note: Environmental Performance (EP), Green Intellectual Capital (GIC), Green Human Capital (GHC), Green Innovation (GI), Green Relational Capital (GRC), Green Structural Capital (GSC), and Green Training (GT).

Chapter Four
Discussions and Implications

4.1 Overview

This chapter outlines the study's major findings on the effect of green intellectual capital, GI, and GT on EP in banks. This is done under the twin sections of the theoretical and practical implications of the research, which is succeeded by the results of hypothesis testing. The measures for the organizations and policymakers are presented to improve the environmental status with suitable intervention. In this context, this chapter summarizes the study's limitations for the reader and outlines suggestions for future research directions.

4.2 General Discussion

This investigation aimed to elaborate on the relationships between green intellectual capital, GI, GT, and EP. The research rigorously evaluated the hypotheses with formal scientific analysis methods to understand the relationships between those critical factors. The study results enrich the pool of theoretical concepts and provide clear recommendations for organizations that aim to improve their EP. Therefore, It is essential to gain such insights to formulate and incorporate GIC as a key component in the broader innovation process and implement sound training programs for environmental sustainability.

4.2.1 Hypotheses Testing

H1: GT positively impacts EP.

Notably, the increase in GT also did not affect EP. This implies that, although it is necessary to establish training initiatives that seek to enhance the green competencies of the employees, the potential outcomes from these initiatives on EP may not be incredibly significant. This finding is inconsistent with Sawar and Mustafa (2023) but aligns with earlier research on training, where it has been commonly observed that the effects are seldom immediate and often indirect (Rehman et al., 2021). However, Pinzone et al. (2019) noted that the advantages of training, especially where sustainability is a concern, may take time to emerge rather than a short-term basis. This supports our findings that GT impacts on EP do not seem direct, suggesting that workforce training takes time to produce results as the trained competencies are gradually infused into workers' daily

practices. Naff (2023) pointed out that the outcomes of training programs and their success are influenced by the design and implementation of the training as well as its alignment with the organization's strategic goals. Our study supports this because it has found that GT programs positively affect EP only if the latter is designed appropriately and follows organizational sustainability initiatives.

Furthermore, the results corroborate the impression of Lontchi et al. (2022), where the author stressed that the perceived effect of training on organizational performance depends on factors including type of training, duration of training, and the extent of change it brings to the organizations after training. Thus, our research furthers this knowledge by suggesting that these variables: the type of the training programs, the length of the training program, and the specific elements of the training program related to EP, should be explored as potential ways of improving the impact of training on EP in the future.

While recognizing that GT is required to enhance competencies in sustainability issues and assist organizations in improving their environmental profiles, this study's findings hint that it could take some time for organizations' EP to respond to the training exercises. This re-emphasizes the necessity of training programs that are appropriately integrated with organizational objectives while also considering their long-term benefits.

H2: GT positively impacts GI.

The analysis showed that GT positively influences GI. This reveals the importance of training, which raises employees' awareness and abilities in sustainability and innovation. In this regard, organizational training about environmental issues, environmental management, and new green opportunities can go a long way in influencing learning processes in the organization to empower employees to produce new innovative ideas effectively.

Jehan et al. (2020) postulated that training programs on environmental issues such as sustainability were the factors that influenced innovation among organizations. They underscored that a workforce armed with up-to-date knowledge of green technologies and sustainability practices is likely to produce solution improvement and offer solutions that would help further improve the organization's overall innovation capability. This aligns with our findings, which found a direct positive effect of GT on GI.

Wang et al. (2020) emphasized the need to address the culture of learning as a way of encouraging innovation. They stated that skills degeneration could be prevented when organizations ensure their employees undertake ongoing sustainable learning and development, fostering employee creativity. This argument receives some support in our study, affirming that GT raises organizational innovation for sustainability, enhancing the organizations' competitive advantage in the market. Johnson (1990) observed that firms implementing elaborate training initiatives advance their environmental quality and innovation streams because the firm trains its employees to be innovative in producing sustainable solutions to environmental issues. Building on this knowledge, our research contributes to this understanding by offering empirical evidence that GT directly contributes to creating innovation practices in organizations.

H3: GT positively impacts GIC.

As found in this study, GT's potential influence on GIC is positive and underlines the need to establish training programs. This result aligns with prior research that GT increases employee skills, knowledge, and commitment to environmental management (Ma et al., 2021; Nisar et al., 2021). Leadership training, technical awareness, and cross-functional environmental capability all point to green intellectual capital created through training programs beneficial to employees' cognizance of ecological sustainability. From this relationship, it is inferred that organizations should encourage training to upgrade their staff's technical proficiency and increase awareness of sustainability and environmental factors. If proper efforts are devoted to appropriate training, an educated workforce is developed to help actualize a sustainable work culture and ideas.

H4: GIC positively impacts EP.

The study's findings depicted a positive and strongly significant relationship between GIC and EP. This result affirms the significance of GIC, especially knowledge, skills, and competencies, with a focus on environmental performance in improving the performance of organizations. These results are inconsistent with those of Rehman et al. (2021) but align with previous studies by Bansal and Roth (2000), Chen (2019), Wang and Juo (2021), and Nikolaou et al. (2024). Using intellectual capital positively impacts the creation and application of green technologies, including sustainability knowledge, to enhance EPs. Bansal and Roth (2000) found that a higher level of investment in environmental and intellectual capital led to improved resource utilization efficiency and

reduced environmental impacts. This resembles the positive relationship revealed in our research. The conclusion drawn in the current study supports Ojo et al. (2022), who underscored the explicative role of structural capital in the EP of organizations. Structural capital in environmental management, which includes systems, processes, and organizational knowledge, forms the bedrock upon which improved environmental management can be implemented. Teixeira et al. (2012a) state that while intellectual capital in the ecological area is instrumental in prompting innovation, it is also crucial for sustainable business advancement in the future. Our results reaffirm Teixeira et al. (2012a) statement. This work contributes to this discussion by showing that organizations with elevated levels of GIC are better positioned to achieve operational environmental management initiatives, resulting in enhanced EP.

To sum up, the present work has shown that the results of this research confirm previous research and insist on the significant significance of GIC in enhancing and sustaining elevated levels of EP. For these reasons, organizations should foster and spend on their intellectual capital, especially that of GT and sustainable development, to advance environmental sustainability.

H5: GIC positively impacts GI.

The competitive possession of GIC on GI was firmly positive and significant. This result points to a significant function of GIC in processes that build an organization's innovation capacity for sustainability in the environmental context. Remarkably, the presence of green intellectual assets and the cultivation of extensive knowledge of environmental issues enable the organization to design innovative approaches to environmental challenges.

Yusliza et al. (2019) highlighted a significant positive relationship between GIC and organizational innovation capabilities. They identified that organizations with more intellectual capital, especially knowledge about the environment, had a better outcome in managing GI, leading to better EP. Our study supports these previous findings by replicating an increased effect of GIC on GI, confirming that intellectual capital enhances innovation within the environmental field. Song et al. (2019) stressed the role of educational and training needs in improving organizational innovation strengths. Our findings align with their notion. More resources for sustainability education and training initiatives will enable organizations to innovate and tackle environmental concerns. Our

results affirm this by demonstrating that the richness of green intellectual assets within an organization, typically developed through such activities, directly enhances innovation capacities. Bansal and Roth (2000) noted that knowledge-sharing and cooperation culture is critical in nurturing innovations in sustainability. We found a positive correlation in the present study, confirming his study. By enhancing collaboration and expertise within the organization, firms can significantly improve their environmental efficiency and innovation abilities. Our research confirms this as it illustrates how GI can be driven by effectively leveraged GIC, which can lead to improvements in EP.

H6: GI positively impacts EP.

This research confirms the hypothesis demonstrating a significant positive relationship between GI and EP, with GI increasing EP. These results can be regarded as consistent and complementary with the prior research and findings, thus confirming the essential contribution of GI to the sustainability of the environment. Prior study works of Asiaei et al. (2022) proved that implementing environmentally friendly technologies and sustainable strategies results in a decrease in resources used and a decrease in emissions and all-around environmental effects of global warming. This research supports these findings, thereby underlining that firms that embrace the theoretical concept of GI do not only increase their sustainability by improving environmental quality but also increase competitiveness by achieving better resource efficiency and diminishing ecological impacts.

According to Chang and Chen (2012), there is a need for constant innovations to ensure sustainability. Of course, the first innovations can make profound positive environmental changes, but since environmental issues are evolving, continuous innovation is needed to improve EP further. This supports the notion that sustainability is not an event but a process that demands constant investment in efficient and sustainable GI technology. This research underscores that GI is a valuable and appropriate strategy in any organization that seeks to attain and sustain its EP.

H7: GI mediates the relationship between GIC and EP

H7 posits that GI serves as a mediator between GIC and EP. This finding is consistent with (Rehman et al., 2021). The results support this hypothesis, with a path coefficient of 0.150, a significant *p-value* of 0.025, and a *t*-statistic of 2.236. This indicates that the accumulation of GIC within banks promotes innovation, subsequently enhancing their

EP. On the other hand, Wang and Juo, 2021) found that GI does not mediate the relationship between GHC and EP since many businesses focus on short-term financial gains from green innovation while ignoring long-term environmental concerns.

The strong mediation effect means that the overall concept of IC makes the basis for innovation in the maintenance and development of sustainability initiatives. The intellectual capital comprises knowledgeable employees, good systems, and solid external relations; when these are present, the banks will likely undertake innovation activities promoting environmental sustainability. For instance, high GIC could lead to new financial innovations like green bonds amongst banking institutions or eco-friendly services that encourage environmentally sustainable development. They, in turn, assist the bank in lowering the tariff on the environment by prompting the clients to embrace more sustainable practices.

Notably, the result points to the fact that the banks must make sure that the intellectual capital they direct towards growth and development is GI. The term GI, therefore, can be defined as creating goods, services, and processes that put less pressure on the environment. The nature of the innovation expected to occur from the concept of intellectual capital should relate to the environment and a cause that would entail the efficiency of energy, pollution, and use of renewable resources. Banks should, therefore, ensure that environmental factors influence their innovation strategy to optimize and utilize their intellectual resources to attain sustainability goals.

This finding is crucial for financial institutions seeking to improve their EP. It suggests that intellectual resources not only drive innovation but also have a direct impact on achieving sustainability goals. Thus, banks need to develop intellectual capital by creating a culture of learning, sharing green knowledge, and effective regulatory processes for innovative green projects.

H8: GIC mediates the relationship between GT and EP

The findings related to *H8* support the hypothesis that GIC mediates the relationship between GT and EP. These are consistent with previously available literature (Nisar et al., 2021; Ahmed et al., 2023), which also states that GIC mediates the relationship between GT and pro- environmental behaviors, contributing to the hotel's EP. The path coefficient of 0.294, with a statistically significant *p*-value of 0.004 and a *t*-statistic of

2.865, indicates a robust and positive mediation effect. This suggests that GT efforts in the Palestinian banking sector significantly contribute to building GIC-enhancing EP. GIC comprises GHC, structural capital, and relational capital, which are imperative to advance and sustain environmental performance in the organization. Through GT, employees and the organization gain unique skills and knowledge in environmental performance, hence improving their intellectual capital. These assets then positively influence the bank's ability to implement sustainable practices and improve environmental outcomes.

This result supports the notion that GIC can be highly effective in helping the organization translate GT initiatives into positive environmental outcomes. From the perspective of banking institutions, this evidence suggests that it is necessary to support GT by building up intellectual capital, especially when identifying, capturing, and leveraging employee and organizational know-how in sustainability.

This finding highlights the role of intellectual capital in translating GT into tangible environmental outcomes. Banks that invest in training focusing on environmental issues build a foundation of knowledge, skills, and competencies that become embedded in the organization. These accumulations of knowledge, called green intellectual capital, enable employees to adopt more sustainable practices and innovate to reduce the bank’s environmental footprint. Intellectual capital is not limited to individual knowledge alone (GHC) but extends to organizational systems and relationships (green structural and relational capital) supporting environmental initiatives.

The findings underscore the importance of intellectual capital as a critical asset in the quest for sustainability. Banks with higher levels of intellectual capital are more likely to implement and sustain green initiatives successfully, thereby improving their EP. This is particularly relevant for banks in developing regions like Palestine, where access to external resources and technologies might be limited. Intellectual capital becomes a crucial internal resource in such contexts that can drive environmental innovation and improvements.

Besides, this result supports the longer-term focus on training and developing employees and building organizational capacity and learning as the enablers for achieving improved environmental sustainability. It is important not to see the training as a once-in-a-while

concept; instead, it should be looked at in light of creating sustainable intellectual capital. This implies that there is a need for banks to regularly update their training exercises in a bid to correspond with changed environmental standards as well as new inventions. The study also proactively advocates that banks should include measures of EP within intellectual capital management to ensure that every training delivered is followed through in improving EP.

H9: GI does not mediate the relationship between GT and EP

The results for H9 suggest that while GT positively affects GI, this indirect relationship does not significantly lead to enhanced EP. Specifically, the path coefficient of 0.168 and the non-significant p-value of 0.091 indicate that the mediation effect of GI between GT and EP is insignificant. The *t*-statistic of 1.689 further underscores the marginal influence of this pathway, falling short of the commonly accepted 1.96 threshold for statistical significance. This result is surprising since GI behaviors are essential for absorbing and using knowledge resources and incorporating green training approaches into better corporate sustainability performance (Xie & Zhu, 2020). While GT, the variable postulated as having a causal link with organizational innovation, deploys such innovation in organizations, this effect produces little impact on the state of the environment. This could imply that whereas GT promotes innovation, it may not be focused more on product innovation that leads to a greener environment but on process or service innovation. On the other hand, the particular kind of GI being championed could not be compelling enough to influence the environmental responsibility of banks in the Palestinian setting. To enhance this relationship, policymakers and practitioners may have to pay attention to better-aligning innovation activities with environmental objectives.

These innovations in the Palestinian banking sector may have limited environmental gains. One possibility that may be able to explain such a situation is that some of the innovations created in the GT process are not sufficient to produce direct environmental improvements. For example, the innovations may be those aimed at increasing customer services or improving organizational processes and are not necessarily linked to sustainability. On the other hand, GI initiatives may take some time before producing an environmental impact because these metrics have not developed enough to produce the expected changes. The study also points to the fact that the nature of the GT provided

may need to be more oriented toward specific sustainability outcomes. GT may create innovative value, but the impact is still small when it is done without directing the resulting innovation toward improving EP. This may highlight the issue of greater synergy between training, organizational development programs, and sustainable strategic directions for the banking industry.

This means that banking institutions may need to question the materials used during training and ensure that innovation processes are directed towards receiving a series of more significant environmental improvements such as reducing carbon emissions, better use of resources, or developing green financial products. In addition, the fact that this research was conducted in Palestinian banks may also impact the relatively low association between GI and EP. Some of the barriers banks in this region may face to sustainable development include economic and political barriers. This may lead to new developments that improve current operational damage rather than longevity or sustainability, thus constraining the relationship between GI and EP.

H10: GIC mediates the relationship between GT and GI

H10 hypothesizes that GIC mediates the relationship between GT and GI. The results support this hypothesis, with a path coefficient of 0.289, a significant *p-value* of 0.022, and a *t*-statistic of 2.283, indicating a significant mediation effect. This suggests that GT initiatives effectively build GIC, which fosters innovation within the banking sector. This result is consistent with (Martínez-Falcó et al., 2024), who found a favorable relationship between GHRM and GI, partially mediated by GIC.

This result is especially relevant as it indicates that the significant mediation of GT on innovation is intellectual capital. If banks are willing to invest in GT for their employees, then it means that they are not only imparting new knowledge and skills to employees but also creating an inventory of an organizational knowledge base for innovation. This encompasses the knowledge base or the GIC, the employee knowledge base, and the systems and processes that enhance the GI within the firm. Therefore, it can be concluded that the banks that spend resources on GT are more likely to build innovation capabilities to create a better environment.

The relevance of this result is in the element of intellectual capital that may facilitate innovative processes. Even when GT is implemented, it may not necessarily encourage

innovation if the employees do not have the requisite intelligence. Nevertheless, GT leads to breakthroughs when used in conjunction with efforts to establish intellectual capital. This implies that banks cannot afford to consider GT as a single fix but as integral to the total plan for developing value in intellectual capital and innovation.

Moreover, the result implies that an organization builds a learning culture. It was also found that banks that foster learning and knowledge management are most likely to develop the intellectual capital required to sustain GI. This could include building structures for knowledge transfer learned in training, for example, designing and organizing internal seminars or establishing cross-functional teams on sustainability. In this way, GT can be integrated into a bigger picture of an intellectual capital management strategy that would encourage banks to continue their innovation work and win the latter more impact.

This creates intellectual capital that shapes the corporate culture of innovation since such ideas create environment-friendly products, services, and processes. From the banking sector's perspective, these results indicate that the training programs do not merely have to teach ways to improve each organization's operational performance but should also develop a pool of knowledge to foster innovative green solutions. Through patronizing GT, banks can encourage innovation that will translate to better EP, thus achieving both an environmental and competitive edge.

4.3 Theoretical Implications

This study offers significant theoretical extensions: First, this research offers several newly developed theoretical propositions that portray the relationship between GIC, GI, GT, and EP. Although these factors have been previously explained in the literature concerning auditing and the banking industry, they have not been covered in an integrated manner as part of the presented framework. Thus, this analysis broadens the existing theories, like the RBV and intellectual capital theory, by presenting the factors that explore their interaction. One of the primary contributions is the validation and extension of the RBV in the context of environmental sustainability. Traditionally, the RBV focuses on tangible assets as a source of competitive advantage, but this study emphasizes the importance of intangible resources like intellectual capital in achieving sustainable performance. By highlighting the role of green intellectual capital—comprising human, structural, and relational elements—this research advances the RBV theory, illustrating

how these intangible assets foster innovation and environmental sustainability. This finding underscores the value of intellectual resources in the banking sector and other industries where traditional physical resources may not be the primary drivers of performance. The study effectively reframes the RBV by suggesting that intangible resources, especially those centered on sustainability, can be a critical source of competitive advantage.

Further, it adds to the body of knowledge in intellectual capital theory by showing that GIC creates value in both innovation and environmental sustainability. The theory conventionally encompasses how and why one intellectual capital results in competitors and value. Nevertheless, this work contributes to the environmental perspective of that debate. Thus, the argument is appropriately made that GHC, GSC, and GRC are critical to generating innovation that is capable of delivering better EP. This extension of intellectual capital theory helps to explain how firms can simultaneously pursue economic and environmental goals, providing a more holistic understanding of how businesses can thrive in the era of sustainability.

Another theoretical consideration is the place where the study has considered GT, which is essential in creating GIC and GI. Thus, although training has been widely researched in human resource management, its part in creating IC and innovation for environmental outcomes is still limited. This research addresses that gap by demonstrating that GT improves employee competencies, increases the organization's intellectual capital, and supports GI. This result is consistent with human capital theory but a step further by further associating the topic of this paper, employee training, with more strategic organizational performance indicators such as innovation and environmental impact, making this study a more holistic treatment of how training affects sustainable business practices.

Further, this study provides an integrated conceptual model for green intellectual capital, GT, green innovative activities, and environmental corporate performance, specifically in the banking sector. This integrated model is beneficial because none of these constructs' relations have been explored individually in the literature. Through the presentation of GIC and GI as the intermediary variables in this study, the understanding of the ability and extent to which banks can leverage their intangible assets to advance sustainability is enhanced. The practicality of this work is in analyzing the phenomenon

of environmental performance in the context of the banking industry, which is rarely touched upon in such debates. Unlike most existing studies, which concentrate on manufacturing or high-tech sectors, this present work extends the analysis to the banking sector, given its strategic importance in promoting sustainability strategies since institutions have tremendous economic influence.

Therefore, it is apparent that the findings of this research have broad significance and pose a theoretical framework for subsequent research on the linkages between intangible assets and the EP of organizations in diverse industries. It also has implications for future research by exposing areas of GT integrated into intellectual capital management; more research could focus on different types of training programs or their effects in different organizational settings. In addition, this study gives experimental substantiation for the theoretical hypothesis that sustainability is not a mere operational concern but a strategic management issue that can be solved by creating intangible assets. The novelty of this research stems from many fronts, especially when addressing the Palestinian banking sector to enhance the theoretical propositions further to illustrate how local factors increase or decrease the suitability of global management theories.

4.4 Practical Implications

As for the managers and practitioners, this work provides recommendations regarding improving EP regarding investments in GIC and GI. Organizations are encouraged to foster GI, such as research and development programs related to sustainability. Promote the idea that people can experiment by producing ideas regarding the environment and incorporating environmental sustainability. Also, they should invest in intelligent capital by implementing practical employee training and education. Maximizing the expertise and knowledge of the employees will ensure that those employees can implement new and sustainable processes in the companies and organizations.

In addition, policymakers should implement embattled training programs. They should ensure that GT strategies are created sustainably to match the organizational training objectives. Assure that training activities are current, broad-based, and relevant to the employee’s needs, improving their awareness and proficiency of sustainable ideas and products.

Moreover, Financial institutions should promote a sustainable culture that embraces sustainability, learning, and green culture. Incorporate all employees into sustainability initiatives and activities so that they become aware of the vital importance. Finally, they should measure and monitor the impact by establishing a method to assess the effectiveness of GT and GI on environmental outcomes. Continuously evaluate the success of sustainability efforts and use the findings from this analysis to make necessary improvements.

4.5 Recommendations

Reflecting on the findings of this study, several key recommendations are presented to policymakers and bank management in the Palestinian banking sector to enhance practices and policies related to green intellectual capital, GI, GT, and EP. The recommendations aim to improve environmental outcomes, promote sustainable banking practices, and enhance long-term competitive advantage in a rapidly evolving sector.

- **Investment in Green Training Programs**

One of the significant suggestions is staff GT, where banks are encouraged to integrate and allocate resources for elaborate programs. Such programs should impart knowledge on greener innovation to all organizational personnel to spearhead and support GI implementation. Training for such a policy should include technical training in using sustainable technology and behavioral modification to show that the bank adheres to particular environmental policies. Policymakers can call banks to adopt GT as part of a broader human capital development plan to develop an organization's sustainability culture.

- **Promotion of Knowledge Sharing and Collaboration**

Thus, GIC has been established as a critical factor in sustaining innovation and delivering enhanced EP. Thus, for the concepts to be most effective, the culture within banks should be encouraged for knowledge sharing and brainstorming; this may involve developing cross-section teams, workshops, and training around sustainability. Asking the employees to develop solutions to environmental issues within the company or promoting innovation should enable banks to tap into staff creativity within the workforce. Policymakers should encourage the development of knowledge-sharing networks for the banking industry to enhance the intellectual assets of the sector.

- **Integration of Green Innovation Strategies**

For the lasting enhancement of EP, GI must be integrated into the strategic management process of the banking firms. This infuses sustainable technology, concepts, and practice into the institution's corporate strategic and developmental structures. In so doing, the banks can bring down their negative impacts on the environment while boosting their business competitiveness. The government can support by informing or compelling the banking institutions to GIs, perhaps offering incentives such as tax breaks to those that sustain the GIs first.

- **Enhancement of EP Metrics**

The author of the text's second recommendation is the adoption of clear and coherent indicators for 'green' performance measurement. These metrics should comply with international standards and best practices as this will help the banking organizations evaluate the system's sustainability. It is recommended that policymakers should encourage the banks to embrace these performance indicators and make sure that their dissemination is appropriate to all internal and external stakeholders. It also sought to enhance the responsibility of banks, besides serving the need to evaluate the strengths, weaknesses, opportunities, and trends of banks over specific periods.

- **Stakeholder Engagement and Transparency**

Good stakeholder relations are very critical for the existence of sustainable programs. The environmental strategy should involve all employees of the banks, its customers, suppliers, and the community at large, and this aspect should be openly communicated to the public about the sustainability goals and progress or lack thereof. Authorities should think about promoting frameworks that enhance environmental disclosures in banks and forming standards for stakeholder engagement.

- **Continuous Improvement and Adaptation**

To successfully respond to various emerging environments, future advancements, and customer expectations, banks have to learn the concept of dynamism. Green policies, strategies, and practices should be assessed periodically to offer relevant knowledge and expertise. Policymakers can still develop guidelines or even pass some policies that make it mandatory for these banks to conduct regular sustainability audits to ensure that they are continuously improving on the strategies adopted, considering the advancements in sustainability.

- **Collaboration with Research Institutions and Industry Peers**

By forming partnerships with research institutes, banks, and other cooperating organizations and industries, there is rapid advancement in sustainability practices. Policymakers should continue promoting the idea of inclusiveness, providing the needed platforms for knowledge sharing, and creating partnerships towards sustainability. Getting into partnerships also assists in identifying new trends and practices that are beneficial in avoiding violations of the law or in adapting to the development of new technologies.

- **Long-term Strategic Planning for Sustainability**

Lastly, banks should consider how sustainability can become a core part of strategic management. This includes integrating the sustainability goals with the strategic directions of the organizations and corporations, hence making sustainability a core principle within the organization's and corporation's mission, vision, and belief systems. Policymakers can do this to encourage setting common sustainability objectives for the industry, including sustainability goals in line with the United Nations' Sustainable Development Goals (SDGs) and their implementation in the strategic management of banks.

By implementing these recommendations, banks in Palestine can position themselves as leaders in sustainable finance, creating value for their organizations, society, and the environment. These initiatives will also contribute to the broader global agenda of achieving sustainable development in the financial sector.

4.6 Study Limitations and Future Directions

The sample size was determined by the number of arrows (elements or indicators) of a structure in the PLS-SEM model, and it must be at least 75. In this case, while successfully collecting 97 samples, the sample size is still limited. Therefore, this small sample size can be considered a limitation of this study in terms of the generalizability of results. In addition, although we made every effort to reach all banks personally and follow up with constant diligence, unfortunately, our efforts were hampered by some banks and individuals who refused to participate. This limited engagement with a subset of potential participants raises concerns about the comprehensiveness and representativeness of our findings.

While this study has provided valuable insights into the relationships between GIC, GI, GT, and EP, several avenues remain for future research to further advance understanding. The following are key areas that warrant exploration: First, longitudinal studies: working on longitudinal studies, which take an extended period to establish the nature of the relations between GIC, GI, GT, and EP, will take an extended period to determine the way the relation between those variables will be.

Such long-term assessments would give conclusions about the sustainability of the impacts obtained and the efficacy of interventions in achieving long-term EP improvement. Second, sector-specific studies investigate the differences between a particular sector and the others by comparing GIC, GI, GT, and EP. The problems and opportunities of using green practices and stimulating innovation might vary between industries. Comparing this study with other sectors could reveal factors unique to each sector. Third, qualitative investigations: further quantitative data with qualitative research techniques to explore the association processes observed in this research. Exploratory research methods like case studies, interviews, and focus groups can offer rich information on organizations' practices, cultures, and decisions involved in sustainability.

Finally, the impact of emerging technologies: examine the impact of emerging technologies such as artificial intelligence, blockchain, and renewable energy innovations on enhancing GIC, fostering GI, and improving EP. Investigate how organizations can leverage technological advancements to accelerate sustainable innovation and EP. By addressing these future research areas, scholars and practitioners can advance knowledge and practices in sustainable development, contributing to creating resilient and environmentally responsible organizations and societies. These efforts are crucial in addressing global challenges such as climate change, resource scarcity, and environmental degradation while fostering inclusive and sustainable economic growth.

4.7 Conclusion

Finally, this research examined the connections between various aspects of organizations' GIC, GI, GT, and EP. This proves that GI and GIC have a lot of positive effects on EP. GI becomes the novel critical factor contributing to enhanced EP, capitalizing on improving intellectual capital with the help of proper GT provision. This assessment confirms that knowledge management enhancement and education and training interventions aimed at sustainability should be strategic investment priorities for

improving innovation and EP within the firm. They are helpful as the main problem and objectives imply the interaction of organizations for achieving sustainability goals and utilizing intellectual resources.

In future studies, it is suggested to continue to examine the development of these relationships over time in the contexts of different industries and various geographical locations. Thus, quantitative studies could help us understand dynamics and stakeholders' perceptions about sustainability activities. Specifically, in these fields, the future development of our knowledge can help businesses understand the sustainability challenges and contribute to improving the state of the environment and the long-term effectiveness of their activities.

List of Abbreviations

Abbreviation	Meaning
IC	Intellectual capital
GIC	Green Intellectual Capital
GSC	Green Structural Capital
GRC	Green Relational Capital
GHC	Green Human Capital
EP	Environment Performance

References

Abbood, I. H. and Neama, N. H. (2023). The role of green banks in achieving environmental sustainability: A field study in a sample of Iraqi government banks / with reference to the Dutch experience. *Entrepreneurship Journal for Finance and Business, 4*(1), 75-86.

Abdul-Rashid, S., Sakundarini, N., Ghazilla, R. and Thurasamy, R. (2017). The impact of sustainable manufacturing practices on sustainability performance: Empirical evidence from Malaysia. *International Journal of Operations & Production Management, 37*(2), 182-204.

Abuatwan, N. (2023). The impact of green finance on the sustainability performance of the banking sector in Palestine: the moderating role of female presence. *Economies, 11*(10), 247.

Ahakwa, I., Yang, J., Agba Tackie, E. and Asamany, M. (2021). Green human resource management practices and EP in Ghana: The role of green innovation. *SEISENSE Journal of Management, 4*(4), 100-119.

Ahmed, H., Nisar, Q.A., Khan, W., Patwary, A.K. and Zaman, S. (2023). Does green HRM really matter for sustainable performance? The role of environmental consciousness and green intellectual capital. *Environmental Science and Pollution Research, 30,* 115882–115895.

Alamsyah, D. P., Hariyanto, O. I. B. and Rohaeni, H. (2019). Customer green awareness and eco-label for organic products. International Conference on Organizational Innovation (ICOI), 100, 64–68.

Al-Emran, M., Mezhuyev, V. and Kamaludin, A. (2018). PLS-SEM in information systems research: a comprehensive methodological reference, in Proceedings of the International Conference on Advanced Intelligent Systems and Informatics, Cairo, Egypt, September 2018

Akhtar, P., Khan, Z., Frynas, J. G., Tse, Y. K. and Rao-Nicholson, R. (2024). Absorptive capacity and innovation-friendly climate influence green innovation performance:

The mediating role of green supply chain management practices. *Business Strategy and the Environment, 33*(2), 471-490. https://doi.org/10.1002/bse.3124

Alkhatib, A.W. and Valeri, M. (2024). Can intellectual capital promote a competitive advantage? Service innovation and big data analytics capabilities in a moderated mediation model. *European Journal of Innovation Management, 27*(1), 263-289.

Amjad, F., Abbas, W., Abbas, W., Zia-UR-Rehman, M., Baig, S., Hashim, M., . . . Rehman, H. (2021). Effect of Green Human Resource Management Practices on Organizational Sustainability: The Mediating Role of Environmental And Employee Performance. *Environmental Science and Pollution Research, 2*8(22), 28191-28206.

Ammad, S., Alaloul, W. S., Saad, S. and Qureshi, A. H. (2021) Personal protective equipment (PPE) usage in construction projects: a systematic review and smart PLS approach. *Ain Shams Engineering Journal, 12*(4):3495–3507.

Andreev, P., Heart, T., Maoz, H. and Pliskin, N. (2009). Validating formative partial least squares (PLS) models: methodological review and empirical illustration. ICIS 2009 Proceedings. Published Online January 1, 2009. https://aisel.aisnet.org/icis2009/193

Asadi, S., Pourhashemi, S.O., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., Aljojo, N. and Razali, N.S. (2020). Investigating influence of green innovation on sustainability performance: a case on Malaysian hotel industry, *Journal of Cleaner Production, 258*, p. 120860

Asiaei, K., Bontis, N., Alizadeh, R. and Yaghoubi, N. M. (2022). Green intellectual capital and environmental management accounting: Two pillars to enhance corporate EP. *Business Strategy and the Environment, 31*(2), 865-882. https://doi.org/10.1002/bse.2928

Asiaei, K., Bontis, N., Alizadeh, R. and Yaghoubi, M. (2021). Green intellectual capital and environmental management accounting: natural resource orchestration in favor of EP, *Business Strategy and the Environment, 31*(1), 76-93

Asiaei, K., O'Connor, N.G., Barani, O. and Joshi, M. (2023). Green intellectual capital and ambidextrous green innovation: the impact on EP. *Business Strategy Environment, 32*(1), 369–386

Association of banks. (2022). - The societal role of banks Www.abp.ps. Retrieved July 26, 2023,. Retrieved from abp.ps/ar/Category/29/%D8%A7%D9%84%D8%AF%D9%88%D8%B1-%D8%A7%D9%84%D9%85%D8%AC%D8%AA%D9%85%D8%B9%D9%8A-%D9%84%D9%84%D8%A8%D9%86%D9%88%D9%83

Asiaei, K., Bontis, N., Alizadeh, R. and Yaghoubi, M. (2022). Green intellectual capital and environmental management accounting: Natural resource orchestration in favor of EP. *Business Strategy and the Environment, 31*(1), 76–93.

Bansal, P., and Roth, K. (2000). Why companies go green: A model of ecological responsiveness. *Academy of Management Journal, 43*(4), 717-736.

Barakat, S., Elbarrawy, A. and Elmansoura, M. (2023). Green supply chain management practices and their impact on operational and sustainable performance: The mediating role of green innovation. *Sustainability, 15*(5), 4112. https://doi.org/10.3390/su15054112

Barba-Aragón, M. I. and Jiménez-Jiménez, D. (2024). Knowledge acquisition from green training and its influence on green innovation: The mediating role of employee pro-environmental behaviors. *Journal of Business Research, 158*, 113636. https://doi.org/10.1016/j.jbusres.2023.113636

Benevene, P., Buonomo, I., Kong, E., Pansini, M. and Farnese, M. L. (2021). Management of green intellectual capital: evidence-based literature review and future directions. *Sustainability, 13*, 8349. https://doi.org/10.3390/su13158349

Bontis, N. (2000). Managing organizational knowledge by diagnosing intellectual capital," Knowledge Management: Classic and Contemporary Works, MIT Press, Cambridge.

Books/Cole.Ruth, S. (2009). Green IT More Than a Three Percent Solution?, in *IEEE Internet Computing, 13*(4), 74-78.

Chen, Y. and Jiang, W. (2024). Green innovation and EP: A moderating effect of green transformational leadership. *Sustainability, 16*(3), 2018. https://doi.org/10.3390/su16032018

Chen, T.B. and Chai, L.T. (2010). Attitude towards the environment and green products: consumers'perspective, *Management Science and Engineering, 4*(2), 27-39

Chen, Y.-S. (2008). The positive effect of green intellectual capital on competitive advantages of firms, *Journal of Business Ethics*, *77*(3), 271-286

Cheng, C., Yang, Y. and Liu, H. (2024). Green innovation and EP: The moderating effects of green supply chain integration and political connections. *Journal of Cleaner Production, 398*, 136624. https://doi.org/10.1016/j.jclepro.2024.136624

Casula, M., Rangarajan, N. and Shields, P. (2020). The potential of working hypotheses for deductive exploratory research. *Quality and Quantity, 55*(5), 1703–1725

Chang, C. and Chen, Y. (2012). The determinants of green intellectual capital, *Management Decision, 50*(1), 74-94.

Cohen, J. (1992). Statistical power analysis. *Current directions in psychological science*, 98-101.

Daily, B. F., Bishop, J. W. and Massoud, J.A. (2012). The role of training and empowerment in environmental performance: A study of the Mexican maquiladora industry, *International Journal of Operations & Production Management, 32*(5), 631-647. https://doi.org/10.1108/01443571211226524

Delgado-Verde, M., Amores-Salvadó, J., Martín de Castro, G. and Navas-López, J. E. (2014). Green intellectual capital and environmental product innovation: the mediating role of green social capital, K*nowledge Management Research and Practice, 12*(3), 261-275.

Diamantopoulos, A. and Siguaw, J.A. (2006). Formative versus reflective indicators in organizational measure development: a comparison and empirical illustration, *British Journal of Management, 17*(4), 263-282.

Dwikat, S.Y., Arshad, D., Noor, M. and Shariff, M. (2022). The influence of systematic strategic planning and strategic business Innovation on the sustainable performance of manufacturing SMEs: the case of Palestine, *Sustainability*, *14*(20), 13388.

Dzinkowski, R. (2000), The value of intellectual capital. *The Journal of Business Strategy 2*(4), 3–4.

Edvinsson, L. and Malone, M. S. (1997). Intellectual Capital: Realizing Your Co.s True Value by Finding Its Hidden Roots (Harper Collin Publishers, USA).

Fayyazi, M., Shahbazmoradi, S., Afshar, Z. and Shahbazmoradi, M. (2015). Investigating the barriers of the green human resource management implementation in oil industry, *Management Science Letters, 5*(1), 101-108.

Elayan, M. B. (2022). Green HRM and Organizational Sustainability: The Mediating Effect of Employees' Attitudes during COVID-19 in the Jordanian Commercial Banking Sector. *International Journal of Business and Management*, 17(6), 43-56.

Federica Ielasi, M. B. (2023). Measuring banks' sustainability performances: The BESGI score. *Environmental Impact Assessment Review, 102*(107216). Retrieved from https://www.sciencedirect.com/science/article/pii/S0195925523001828

Fintech. (2023, July 26). *Www.pma.ps*. Retrieved from Www.pma.ps: https://www.pma.ps/fintech/ar/index.htm

Haldorai, K., Kim, W.G. and Garcia, R.L.F. (2022). Top management green commitment and green intellectual capital as enablers of hotel EP: the mediating role of green human resource management, *Tourism Management, 88*, 104431.

Haider, S. A. (2021). Impact of Green Training on EP through Mediating Role of Competencies and Motivation. Retrieved from https://www.mdpi.com/2071-1050/13/10/5624

Hair et al. (2016). A primer on partial least squares structural equation modeling (PLS-SEM).

Hair, J.F., Ringle, C.M. and Sarstedt, M. (2011). PLS-SEM: indeed a silver bullet, *The Journal of Marketing Theory and Practice, 19*(2), 139-152

Hair, J. F., Hult, G. T., Ringle, C., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM) - Joseph F. Hair, Jr., G. Tomas M. Hult, Christian Ringle, Marko Sarstedt. In *Sage*.

Hair, J. F., Risher, J. J., Sarstedt, M. and Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Henseler, J., Ringle, C. M. and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, *43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

Horváthová, Eva. (2010). Does EP Affect Financial Performance? A Meta-Analysis. *Ecological Economics*, *70*(1), 52–59

Hu, L.-t. and Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification", *Psychological Methods*, *3*(4), 424.

IDRBT. (2013, September 09). Institute for development and research in banking technology. *Green Banking*. Retrieved from www.idrbt.ac.in/.../Green%20Banking%20Frame work%20(2013).pdf.

ISO (2001). Gestao da qualidade-Diretrizes para treinamento. ABNT-Associaç ~ ao~ Brasileira de Normas Tecnicas, p. 10015

ISO, N. (2004). 14001-Sistemas da gest~ ao ambiental: requisitos com orientaçao para ~ uso. ABNT, Rio de Janeiro.

Fernando, P. M. P., & Fernando, K. S. D. (2017). *Study of Green Banking Practices in the Sri Lankan Context: A Critical Review BT - Selected Papers from the Asia-Pacific Conference on Economics & Finance (APEF 2016)* (E. Lau, L. M. Tan, & J. H. Tan (eds.); pp. 125–143). Springer Singapore.

Jain, V. and Kalapurackal, P. S. (2023). Green human resource management and sustainable performance: The role of green training and development. *Human Resource Development Review, 22(*1), 56-74. https://doi.org/10.1177/15344843221145189

Jehan, Y., Hussai, D., Batool, M. and Imran, M. (2020). Effect of green human resource management practices on environmental sustainability. *International Journal of Human Capital in Urban Management, 5*(2), 153–164

Johnson, P. (1990). Managing environmental issues: A case study of corporate training programs. *Journal of Environmental Management, 31*(2), 123-135.

Johnson, W. H. A. (1999). An integrative taxonomy of intellectual capital: Measuring the stock and flow of intellectual capital components in the firm. *International Journal of Technology Management, 18*(5–8), 562–575.

Kanan, M., Taha, B., Saleh, Y., Alsayed, M., Assaf, R., Ben Hassen, M., Alshaibani, E., Bakir, A. and Tunsi, W. (2023). Green innovation as a mediator between green human resource management practices and sustainable Performance in Palestinian manufacturing industries. *Sustainability*, *15*, 1077.

Khatun, M. N., Sarker, M. N. I. and Mitra, S. (2021). Green banking and sustainable development in Bangladesh. *Sustainability and Climate Change, 14*(5), 262–271

Kuo, T.-C., Tsai, H.-L., & Yu, C.-C. (2022). The role of green human resource management practices in fostering green innovation and improving EP. *Journal of Cleaner Production, 331*, 130015. https://doi.org/10.1016/j.jclepro.2022.130015

Liu, H., Cheng, C. and Yang, Y. (2022). Green intellectual capital and green innovation in emerging markets: The mediating role of green absorptive capacity and moderating role of innovation climate. *Journal of Knowledge Management, 26*(3), 669-689. https://doi.org/10.1108/JKM-09-2020-0723

Li, X., Du, J., and Long, H. (2020) Mechanism for green development behavior and performance of industrial enterprises (GDBP-IE) using partial least squares structural equation modeling (PLS-SEM *International Journal of Environmental Research and Public Health, 17*(22):1–19. https://doi.org/10.3390/ijerph17228450

Lontchi, C., Yang, B. and Su, Y. (2022). The mediating effect of financial literacy and the moderating role of social capital in the relationship between financial inclusion and sustainable development in Cameroon. *Sustainability, 14*(22), 15093.

Ma, Y., Chen, S.C. and Ruangkanjanases, A. (2021). Understanding the antecedents and consequences of green human capital. *SAGE Open 2021, 11*, 2158244020988867.

Malik, S. Y., Cao, Y., Mughal, Y. H. Kundi, G. M., Mughal, M. H. and Ramayah, T. (2020) Pathways towards sustainability in organizations: Empirical evidence on the role of green human resource management practices and green intellectual capital. *Sustainability, 12,* 3228.

Marco-Lajara, B., Zaragoza-Sáez, P. C., Martínez-Falcó J. and Sánchez-García, E. (2023) Does green intellectual capital affect green innovation performance? Evidence from the Spanish wine industry. *British Food Journal, 125*(4), 1469-1487

Martínez-Falcó, J., Sánchez-García, E., Marco-Lajara, B. and Zaragoza-Sáez, P. (2024). Green human resource management and green ambidexterity innovation in the wine industry: exploring the role of green intellectual capital and top management environmental awareness. *Discover Sustainability, 5*(1), 1-19.

Mehmood, K. K. and Hanaysha, J. R. (2022). Impact of corporate social responsibility, green intellectual capital, and green innovation on competitive advantage: building contingency model, *International Journal of Human Capital and Information Technology Professionals (IJHCITP),* 13(1), 1-14.

Munawar, S., Yousaf, H., Ahmed, M. and Rehman, S. (2022). Effects of green human resource management on green innovation through green human capital, environmental knowledge, and managerial environmental concern. *Journal Of Hospitality And Tourism Management, 52,* 141-150.

Naffziger, D.W., Ahmed, N.U. and Montagno, R.V. (2003). Perceptions of environmental consciousness in US small business: an empirical study, *SAM Advanced Management Journal, 68*(2), 23-32

Nath, V., Nayak, N. and Goel, A. (2014). Green banking practices: a review, *International Journal of Research in Business Management, 2*(4), 45-62.

Nikolaou, I. E., Tsalis, T. A., Kostakis, I., Stergiopoulou, F., Athanasiadou, I., Lanaras-Mamounis, G., and Tsagarakis, K. P. (2024). Green intellectual capital: a critical factor to explain the relationship between corporate sustainability and financial performance. Environment, Development and Sustainability, 26, 22863–22884. https://doi.org/10.1007/s10668-023-03579-1

Nisar, Q. A., Haider, S., Ali, F., Jamshed, S., Ryu, K., and Gill, S. S. (2021). Green human resource management practices and EP in Malaysian green hotels: the role of green intellectual capital and pro-environmental behavior. *Journal of Cleaner Production, 311,* 127504.

Nitzl, C. (2016). The use of partial least squares structural equation modelling (PLS-SEM) in management accounting research: directions for future theory development. *Journal of Accounting Literature, 37,* 19-35.

Nizam, E., Ng, A., Dewandaru, G., Nagayev, R. and Nkoba, M. A. (2019). The impact of social and environmental performance on fnancial performance: a global analysis of the banking sector. *Journal of Multinational Financial Management, 49,* 35–53

Ojo, A. O., Tan, C. N. L. and Alias, M. (2022). Linking green HRM practices to environmental performance through pro-environment behaviour in the information technology sector. *Social Responsibility Journal, 18*(1), 1-18.

Mhadhbi, K., Terzi, C., & Bouchrika, A. (2020). Banking sector development and economic growth in developing countries: a bootstrap panel Granger causality analysis. *Empirical Economics, 58*(6), 2817–2836.

Pinzone, M., Guerci, M., Lettieri, E. and Huisingh, D. (2019). Effects of 'green' training on pro-environmental behaviors and job satisfaction: Evidence from the Italian healthcare sector. *Journal of Cleaner Production, 226,* 221–232

PMA. (2022, July 26). l Reports. Retrieved from https://www.pma.ps/en/Publications//AnnualReports

PMA Annual Reports. (2023, July 26). *Www.pma.ps*. Retrieved from Www.pma.ps.: https://www.pma.ps/en/Publications//AnnualReports.

Qureshi, T. M., Singh, A. and Almessabi, B. N. (2020) Green human resource management for organizational sustainability: a need of the hour for modern workplace. *Journal of Southwest Jiaotong University*, *55*(4).

Rashid, M. (2024). *The Daily Star*. Retrieved from https://www.thedailystar.net/anniversary-supplement-2024/innovation-key-the-future/news/banking-innovation-key-prosperity-3548266

Rehman, S.U., Kraus, S., Shah, S.A., Khanin, D. and Mahto, R.V. (2021). Analyzing the relationship between green innovation and environmental performance in large manufacturing firms, *Technological Forecasting and Social Change*, *163*, 120481, https://doi.org/10.1016/j.techfore.2020.120481

Ringle, C., Da Silva, D. and Bido, D. (2015). Structural Equation Modelling with the SmartPLS. *Brazilian Journal of Marketing*,*13*(2), 56–73.

Roos, G. and Roos, J. (1997). Measuring your companys intellectual performance, *Long Range Planning*, *30*(3), 413–426.

Rouf, M.A. and Akhtaruddin, M. (2018). Factors affecting the voluntary disclosure: a study by using smart PLS-SEM approach, *International Journal of Law and Management*, *60*(6), 498-1508

Rubin, A. and Babbie, E. R. (2008). Research methods for social work (6th ed.). Belmont, CA: Thompson

Sarwar, A. and Mustafa, A. (2023). Analysing the impact of green intellectual capital on environmental performance: The mediating role of green training and development. Technology Analysis & Strategic Management, 1–14.

Singh, S. K., Giudice, M. D., Chierici, R. and Graziano, D. (2020). Green innovation and EP: the role of green transformational leadership and green human resource management, *Technological Forecasting and Social Change*, *150*, 119762.

Sobaih, A. E. E., Hasanein, A. and Elshaer, I. (2020). Infuences of green human resources management on EP in small lodging enterprises: The role of green innovation. *Sustainability*, *12*(24), 1–19.

Song, M., Fisher, R., and Kwoh, Y. (2019). Technological challenges of green innovation and sustainable resource management with large scale data. *Technological Forecasting and Social Change 144*, 361–368.

Stewart, T. A. (1994). Your companys most valuable asset: Intellectual capital, *Fortune 130*(7), 68–74.

Teixeira, P. J., Carraça, E. V., Markland, D., Silva, M. N. and Ryan, R. M. (2012a). Exercise, physical activity, and self-determination theory: A systematic review. *The International Journal of Behavioral Nutrition and Physical Activity*, *9*, Article 78. https://doi.org/10.1186/1479-5868-9-78

Teixeira, A.A., Jabbour, C.J.C., de Sousa Jabbour, A.B.L. (2012b). Relationship between green management and environmental training in companies located in Brazil: a theoretical framework and case studies. International Journal of Production Economics, 140(1), 318e329. http://dx.doi.org/10.1016/j.ijpe.2012.01.009

Tolliver, C., Fujii, H., Keeley, A. and Managi, S. (2021). Green Innovation and Finance In Asia. Asian Economic Policy Review, 16(1), 67-87.

Ullah, S., Mehmood, T. and Ahmad, T. (2022). Green Intellectual Capital And Green HRM Enabling Organizations Go Green. *International Journal of Innovation Science, 15(2), 245-259.*

Wang, C. and Juo, W. (2021). An environmental policy of green intellectual capital: green innovation strategy for performance sustainability, *Business Strategy and the Environment*, *30*(7), 3241-3254.

Wang, J., Xue, Y. and Yang, J. (2020). Boundary-spanning search and firms' green innovation: The moderating role of resource orchestration capability. *Business Strategy and the Environment*, *29*(2), 361–374

Weng, H. H., Chen, J. S. and Chen, P. C. (2015). Effects of green innovation on environmental and corporate performance: A stakeholder perspective. *Sustainability*, *7* (5), 4997-5026. https://doi.org/10.3390/su7054997

Wu, T., Tseng, M. L., Chiu, A. S. and Lim, M. K. (2024). Green human resource management: A framework to improve environmental innovation and EP. *Journal of Environmental Management, 317*, 115470. https://doi.org/10.1016/j.jenvman.2024.115470

Xie, X. and Zhu, Q. (2020). Exploring an innovative pivot: How green training can spur corporate sustainability performance. *Business Strategy and the Environment, 29,* 2432–2449.

Yadav, R. and Pathak, G. (2013). Environmental performance through green banking: A study on private and public sector banks in India. *OIDA International Journal of Sustainable Development, 6*(08), 37–48.

Yadav, N. and Mathew, M. (2023). Examining the role of green human resource management practices in fostering EP: The mediating role of environmental training and empowerment. *Business Strategy and the Environment, 32(*3), 1547-1560. https://doi.org/10.1002/bse.3219

Yadiati, W., Nissa, N., Paulus, S., Suharman, H. and Meiryani, M. (2019). The role of green intellectual capital and organizational reputation in influencing EP, *International Journal of Energy Economics and Policy*, *9*(3), 261-267.

Yafi, E. T., Tehseen, S. and Haider, S. A. (2021). Impact of green training on EP through mediating role of competencies and motivation. *Sustainability*, 13(10), 5624.

Yong, J.Y., Yusliza, M.-.-Y., Jabbour, C.J.C. and Ahmad, N.H. (2020). Exploratory cases on the interplay between green human resource management and advanced green manufacturing in light of the Ability-Motivation-Opportunity theory, *Journal of Management Development*, 39(1), 31-49.

Yong, J.Y., Yusliza, M.Y., Ramayah, T., Farooq, K. and Tanveer, M.I. (2023). Accentuating the interconnection between green intellectual capital, green human resource management and sustainability, *Benchmarking: An International Journal, 30*(8), 2783-2808.

Yong, J.Y., Yusliza, M.-Y., Ramayah, T. and Fawehinmi, O. (2019). Nexus between green intellectual capital and green human resource management, J*ournal of Cleaner Production, 215,* 364-374.

Yusliza, M., Yong, J.Y., Tanveer, M.I., Ramayah, T., Faezah, J.N. and Muhammad, Z. (2020), A structural model of the impact of green intellectual capital on sustainable performance, *Journal of Cleaner Production, 249*, 119334.

Yin, R. (2009). Case Study Research: Design and Methods (5th Ed.). Sage.

Zahra, A., Ayub, H. and Abdullah. (2022). Impact of Green Intellectual Capital on Sustainable Green Banking: Moderating Role of Competitive Pressure. *Journal of Accounting and Finance in Emerging Economies, 8*(2), 251-262.

Zhang, X., Wang, Z., Zhong, X., Yang, S. and Siddik, A.B. (2022). Do green banking activities improve the banks' EP? The mediating efect of green financing. *Sustainability*, *14*(2), 989.

Zhixia, C., Hossen, M., Muzafary, S. and 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

Appendices

Appendix A

Tables

Table A.1

Sample Size Calculation

Maximum number of arrows pointing at construct	*Significance level*											
	1%				*5%*				*10%*			
	Minimum R^2				*Minimum R^2*				*Minimum R^2*			
	0.10	*0.25*	*0.50*	*0.75*	*0.10*	*0.25*	*0.50*	*0.75*	*0.10*	*0.25*	*0.50*	*0.75*
2	158	75	47	38	110	52	33	26	88	41	26	21
3	176	84	53	42	124	59	38	30	100	48	30	25
4	191	91	58	46	137	65	42	33	111	53	34	27
5	205	98	62	50	147	70	45	36	120	58	37	30
6	217	103	66	53	157	75	48	39	128	62	40	32
7	28	109	69	56	166	80	51	41	136	66	42	35
8	238	114	73	59	174	84	54	44	143	69	45	37
9	247	119	76	62	181	88	57	46	150	73	47	39
10	256	123	79	64	189	91	59	48	156	76	49	41

Table A.2

f-square(f2) Statistics

	EP	GI	GIC	GT
EP				
GI	0.220			
GIC	0.176	0.139		
GT	0.019	0.172	1.386	

Note: EP (EP), Green Intellectual Capital (GIC), Green Innovation (GI), and Green Training (GT).

Table A.3

Path coefficients

	EP	GHC	GI	GIC	GRC	GSC	GT
EP			0.685				
GHC				-0.009			
GI							
GIC	0.851		0.172				0.92
GRC				0.774			
GSC				0.228			
EP							

Table A.4

Factor loading.

	EP	GHC	GI	GIC	GRC	GSC	GT
EP 1	0.882						
EP 11	0.596						
EP 2	0.885						
EP 3	0.854						
EP 4	0.821						
EP 5	0.864						
EP 6	0.872						
EP 7	0.863						
EP 8	0.834						
EP 9	0.877						
GHC 1	0.868						
GHC 1		0.872					
GHC 2				0.717			
GHC 2				0.759			
GHC 3		0.905					
GHC 3				0.7			
GHC 4		0.847					
GHC 4				0.725			
GI 1		0.863					
GI 2				0.583			
GI 3		0.698					
GI 4			0.849				
GI 5			0.927				
GI 6			0.848				
GI 7			0.926				
GRC 1			0.919				
GRC 1			0.951				
GRC 2			0.941				

GRC 2		0.272				
GRC 3	0.296					
GRC 3			0.831			
GSC 1				0.892		
GSC 1			0.867			
GSC 2				0.898		
GSC 2			0.86			
GSC 4				0.883		
GSC 4			0.701			
GSC 5					0.879	
GSC 5					0.879	
GSC 6			0.729			
GSC 6			0.338			
GT 1					0.502	
GT 10			0.764			
GT 2					0.901	
GT 3					0.87	
GT 4			0.879			
GT 5						0.858
GT 7						0.876
GT 8			0.883			
GT 9						0.833

Table A.5

Higher-Order Construct Validity

	VIF	**Outer Weights**	**Standard deviation (STDEV)**	**T statistics (|O/STDEV|)**	P values	**Outer Loadings**
GHC -> GIC	2.832	0.142	0.156	0.913	0.361	0.839
GRC -> GIC	2.422	0.631	0.153	4.128	0	0.959
GSC -> GIC	2.775	0.315	0.149	2.118	0.034	0.875

Table A.6

Latent Variable Correlation

	EP	GHC	GI	GIC	GRC	GSC	GT
EP	1	0.679	0.858	0.851	0.802	0.727	0.852
GHC	0.679	1	0.653	0.832	0.82	0.905	0.731
GI	0.858	0.653	1	0.783	0.743	0.626	0.773
GIC	0.851	0.832	0.783	1	0.957	0.866	0.92
GRC	0.802	0.82	0.743	0.957	1	0.834	0.827
GSC	0.727	0.905	0.626	0.866	0.834	1	0.786
GT	0.852	0.731	0.773	0.92	0.827	0.786	1

Table A.7

Cross-Loading

	EP	GHC	GI	GIC	GRC	GSC	GT
EP 1	0.886	0.597	0.713	0.727	0.726	0.637	0.709
EP 11	0.587	0.318	0.605	0.387	0.361	0.326	0.493
EP 2	0.883	0.541	0.792	0.681	0.657	0.561	0.797
EP 3	0.856	0.6	0.656	0.718	0.708	0.671	0.671
EP 4	0.825	0.59	0.667	0.741	0.755	0.644	0.68
EP 5	0.866	0.63	0.717	0.77	0.743	0.695	0.774
EP 6	0.874	0.596	0.739	0.715	0.724	0.627	0.645
EP 7	0.861	0.594	0.739	0.709	0.687	0.646	0.731
EP 8	0.835	0.512	0.683	0.634	0.603	0.584	0.776
EP 9	0.876	0.566	0.708	0.707	0.67	0.633	0.835
GHC 1	0.87	0.648	0.875	0.749	0.75	0.642	0.759
GHC 1	0.609	0.872	0.51	0.735	0.74	0.806	0.614
GHC 2	0.609	0.872	0.51	0.735	0.74	0.806	0.614
GHC 2	0.602	0.905	0.61	0.776	0.735	0.809	0.68
GHC 3	0.602	0.905	0.61	0.776	0.735	0.809	0.68
GHC 3	0.569	0.847	0.541	0.716	0.684	0.733	0.633
GHC 4	0.569	0.847	0.541	0.716	0.684	0.733	0.633
GHC 4	0.586	0.863	0.577	0.741	0.692	0.804	0.643
GI 1	0.586	0.863	0.577	0.741	0.692	0.804	0.643
GI 2	0.46	0.698	0.498	0.597	0.582	0.636	0.484
GI 3	0.46	0.698	0.498	0.597	0.582	0.636	0.484
GI 4	0.766	0.553	0.85	0.623	0.634	0.494	0.737
GI 5	0.781	0.619	0.927	0.721	0.725	0.588	0.67
GI 6	0.65	0.503	0.848	0.546	0.532	0.488	0.583
GI 7	0.828	0.61	0.926	0.715	0.696	0.628	0.699
GRC 1	0.754	0.558	0.919	0.697	0.703	0.534	0.69
GRC 1	0.824	0.603	0.951	0.712	0.693	0.583	0.756
GRC 2	0.813	0.651	0.942	0.763	0.739	0.627	0.776
GRC 2	0.261	0.301	0.266	0.202	0.168	0.253	0.165
GRC 3	0.705	0.729	0.654	0.854	0.892	0.753	0.678

GRC 3	0.705	0.729	0.654	0.854	0.892	0.753	0.678
GSC 1	0.724	0.73	0.678	0.889	0.898	0.746	0.757
GSC 1	0.724	0.73	0.678	0.889	0.898	0.746	0.757
GSC 2	0.724	0.732	0.655	0.883	0.883	0.732	0.773
GSC 2	0.724	0.732	0.655	0.883	0.883	0.732	0.773
GSC 4	0.6	0.858	0.515	0.717	0.669	0.879	0.606
GSC 4	0.6	0.858	0.515	0.717	0.669	0.879	0.606
GSC 5	0.571	0.746	0.505	0.749	0.732	0.879	0.691
GSC 5	0.571	0.746	0.505	0.749	0.732	0.879	0.691
GSC 6	0.31	0.45	0.223	0.342	0.242	0.501	0.336
GSC 6	0.31	0.45	0.223	0.342	0.242	0.501	0.336
GT 1	0.624	0.783	0.539	0.782	0.728	0.901	0.72
GT 10	0.624	0.783	0.539	0.782	0.728	0.901	0.72
GT 2	0.766	0.808	0.667	0.902	0.867	0.87	0.766
GT 3	0.766	0.808	0.667	0.902	0.867	0.87	0.766
GT 4	0.795	0.519	0.724	0.693	0.64	0.594	0.858
GT 5	0.766	0.63	0.711	0.774	0.769	0.641	0.874
GT 7	0.673	0.509	0.521	0.672	0.604	0.615	0.834
GT 8	0.833	0.663	0.738	0.786	0.748	0.722	0.945
GT 9	0.788	0.631	0.704	0.764	0.729	0.669	0.932

Table A.8

Path Coefficient

	EP	GHC	GI	GIC	GRC
EP			0.689		
GHC				-0.018	
GI					
GIC	0.821		0.115		
GRC				0.802	
GSC				0.234	
GT			0.084		

Appendix B

Questionnaire in English

To the managers of the different administrative levels in all bank branches in Palestine: Greetings; the researcher is conducting a study entitled "GIC, GI, and GT towards a Sustainable Environment: Evidence from the Banking Sector in Palestine".

The following questionnaire examines the impact of GIC, green innovation, and GT on the sustainable environment.

Based on your experience in this field, please fill out the questionnaire to help the researcher complete this study. This information will be used for scientific research purposes only.

Thank you for your cooperation.

Green Intellectual Capital (GIC)						
	Green Human Capital (GHC)	Strongly disagree	Disagree	neutral	I agree	I strongly agree
1	The productivity and contribution of employees in relation to environmental protection in the Bank is better than the productivity and contribution of its main competitors.					
2	The efficiency of the Bank's employees in protecting the environment is better than that of its main competitors.					
3	The environmental protection products and services the Bank's employees provide are better than those of its main competitors.					
4	The cooperative degree of teamwork related to environmental protection at the bank is more than that of its main competitors.					
5	Managers in the bank can fully support their employees in achieving environmental protection goals.					
Green Construction Capital (GSC)						

1	The bank's environmental protection management system is better than its main competitors.					
2	The bank's profits earned from environmental protection activities exceed its main competitors.					
3	The ratio of the Bank's investments in environmental protection in R&D to its sales is higher than that of its main competitors.					
4	The innovation around environmental protection in the bank is more than that of its main competitors.					
5	Invest in the bank's environmental protection facilities more than its main competitors.					
6	The Bank's environmental knowledge management system is suitable for accumulating and exchanging environmental management knowledge.					
	Green Relational Capital (GRC)					
1	The bank designs its products or services according to the environmental desires of its customers.					
2	The Bank's cooperative relations on environmental protection with its upstream suppliers and downstream customers are stable.					
3	The Bank enjoys stable and cooperative environmental protection relationships with its strategic partners.					

	EP (EP)	Strongly disagree	Disagree	neutral	I agree	I strongly agree
1	The bank has received important certificates related to the environment.					
2	On average, the bank's overall EP has improved over the past five years.					

3	Resource consumption, for example, water, electricity, and gas, has decreased over the past 3 years.					
4	Improving environmental compliance at the bank.					
5	The bank complies with environmental regulations (i.e., emissions and waste disposal).					
6	Our bank has reduced the energy consumption of IT infrastructure.					
7	The bank buys energy-efficient IT hardware.					
8	The bank has reduced its total emissions, waste, and the use of hazardous and toxic substances.					
9	The bank purchases IT products from vendors with end-of-life/recycling programs.					
10	Our bank disposes of IT equipment in an environmentally friendly manner.					
11	Our banking operations have turned paperless.					

	Green Innovation (GI)	Strongly disagree	Disagree	neutral	I agree	I strongly agree
1	Our bank is actively adopting new green products, processes, and services.					
2	Our bank actively exploits new green products, processes, and services.					
3	Our bank is actively discovering new green markets.					
4	Our bank is actively entering new green technology.					
5	Our bank is actively improving green products, processes, and services.					
6	Our bank is actively modifying existing green products, processes, and services.					

7	Our bank actively promotes the current green market.					
8	Our bank is actively promoting existing green technology.					

	Green Training (GT)	Strongly disagree	Disagree	neutral	I agree	I strongly agree
1	The contents of green training are raised through a systematic analysis of training gaps and needs.					
2	The responsibilities and duties of official green coaches are strictly defined.					
3	Green training is offered to all employees (including training outsourcing).					
4	There is sufficient infrastructure (physical space, materials, people) to deliver green training.					
5	Green training sessions occur within the bank.					
6	Green coaching sessions take place outside the bank.					
7	There are sufficient evaluations of employee performance after attending green training sessions.					
8	Overall, employees are satisfied with the green training provided.					
9	The topics addressed during the green training are relevant and recent to the Bank's activities.					
10	Employees who receive green training can apply green knowledge in daily activities.					

Questionnaire in Arabic

إلى السادة مدراء المستويات الادارية المختلفة في كافة فروع البنوك في فلسطين :تحية طيبة وبعد، تقوم الباحثة بإجراء دراسة تحت عنوان" **رأس المال الفكري الأخضر والابتكار الأخضر والتدريب الأخضر نحو البيئة المستدامة: أدلة من القطاع المصرفي في فلسطين** ".استكمالاً لمتطلبات الحصول على درجة الماجستير في تخصص الادارة الهندسية في جامعة النجاح الوطنية.

الاستبيان التالي لدراسة أثر رأس المال الفكري الأخضر والابتكار الأخضر والتدريب الأخضر على البيئة المستدامة.

بناءً على خبرتكم في هذا المجال يرجى تعبيئة الاستبيان لمساعدة الباحثة على استكمال هذه الدراسة. علماً بأن هذه المعلومات ستستخدم لأغراض البحث العلمي فقط.

شكراً على حسن تعاونكم.

	رأس المال الفكري الأخضر (GIC)					
	رأس المال البشري الأخضر(GHC)	لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
1	إنتاجية ومساهمة الموظفين فيما يتعلق بحماية البيئة في البنك أفضل من إنتاجية ومساهمة منافسيه الرئيسيين.					
2	كفاءة الموظفين في حماية البيئة في البنك أفضل من كفاءة منافسيه الرئيسيين.					
3	منتجات وخدمات حماية البيئة التي يقدمها موظفو البنك أفضل من منتجات وخدمات منافسيه الرئيسيين.					
4	إن الدرجة التعاونية للعمل الجماعي المتعلق بحماية البيئة في البنك هي أكثر من درجة منافسيه الرئيسيين.					
5	يمكن للمديرين في البنك تقديم الدعم الكامل لموظفيهم لتحقيق أهداف حماية البيئة.					
رأس المال الإنشائي الأخضر (GSC)						
1	نظام إدارة حماية البيئة في البنك أفضل من نظام منافسيه الرئيسيين.					

2	أرباح البنك المكتسبة من أنشطة حماية البيئة هي أكثر من أرباح منافسيه الرئيسيين.					
3	نسبة استثمارات البنك في حماية البيئة في البحث والتطوير إلى مبيعاته أكثر من نسبة منافسيه الرئيسيين.					
4	الابتكار حول حماية البيئة في البنك هو أكثر من تلك الخاصة بمنافسيه الرئيسيين.					
5	الاستثمار في مرافق حماية البيئة في البنك أكثر من منافسيه الرئيسيين.					
6	نظام إدارة المعرفة البيئية في البنك مناسبا لتراكم وتبادل المعرفة الإدارية البيئية.					
رأس المال العلائقي الأخضر(GRC)						
1	يقوم البنك بتصميم منتجاته أو خدماته وفقا للرغبات البيئية لعملائه.					
2	علاقات البنك التعاونية حول حماية البيئة مع مورديه في المنبع وعملاء المصب مستقرة.*					
3	يتمتع البنك بعلاقات مستقرة وتعاونية حول حماية البيئة مع شركائه الاستراتيجيين.					

* المنبع هو سلسلة الاستثمار (الموردين) والمصب هو سلسلة التوريد (العملاء)

	الأداء البيئي					
	الأداء البيئي	لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
1	حصل البنك على شهادات مهمة متعلقة بالبيئة.					
2	في المتوسط، تحسن الأداء البيئي العام للبنك على مدى السنوات الخمس الماضية.					
3	انخفض استهلاك الموارد على سبيل المثال المياه والكهرباء والغاز خلال السنوات الـ 3 الماضية.					

4	تحسين الامتثال البيئي* في البنك.						
5	يمتثل البنك للوائح البيئية (أي الانبعاثات والتخلص من النفايات).						
6	قام مصرفنا بتقليل استهلاك الطاقة للبنية التحتية لتكنولوجيا المعلومات.						
7	يشتري البنك أجهزة تكنولوجيا المعلومات الموفرة للطاقة.						
8	قام البنك بتخفيض إجمالي انبعاثاته ونفاياته واستخدام المواد الخطرة والسامة.						
9	يشتري البنك منتجات تكنولوجيا المعلومات من البائعين الذين لديهم برامج نهاية العمر / إعادة التدوير*.						
10	يتخلص مصرفنا من معدات تكنولوجيا المعلومات بطريقة صديقة للبيئة.						
11	لقد تحولت عملياتنا المصرفية إلى عمليات غير ورقية.						

* الامتثال البيئي: هو الامتثال للقوانين واللوائح والمعايير البيئية والمتطلبات الأخرى مثل تصاريح الموقع للعمل.

* مثل تحسين أنظمة نهاية العمر ، وبرامج الاسترداد ، والاستعادة وإعادة التدوير. ومن العوامل الأخرى إدارة النفايات، وتصميم التفكيك وإعادة التجميع، وإضفاء الطابع المادي على المواد، وإعادة التدوير، واللوجستيات العكسية.

	الابتكار الأخضر(GI)					
	الابتكار الاخضر	لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
1	يتبنى مصرفنا بنشاط منتجات وعمليات وخدمات خضراء جديدة.					
2	يستغل مصرفنا بنشاط المنتجات والعمليات والخدمات الخضراء الجديدة.					
3	مصرفنا يكتشف بنشاط الأسواق الخضراء الجديدة.					
4	يدخل مصرفنا بنشاط التكنولوجيا الخضراء الجديدة.					

5	يعمل مصرفنا بنشاط على تحسين المنتجات والعمليات والخدمات الخضراء					
6	يقوم مصرفنا بتعديل المنتجات والعمليات والخدمات الخضراء الحالية بنشاط.					
7	مصرفنا يعزز بنشاط السوق الخضراء الحالية					
8	يعمل مصرفنا بنشاط على تعزيز التكنولوجيا الخضراء الحالية.					

	التدريب الاخضر (GT)					
	التدريب الاخضر	لا أوافق بشدة	لا أوافق	محايد	أوافق	أوافق بشدة
1	يتم رفع محتويات التدريب الأخضر من خلال تحليل منهجي للفجوات والاحتياجات التدريبية.					
2	يتم تحديد مسؤوليات وواجبات المدربين الخضر الرسميين بدقة.					
3	يتم تقديم التدريب الأخضر لجميع الموظفين (بما في ذلك الاستعانة بمصادر خارجية للتدريب).					
4	هناك بنية تحتية كافية (مساحة مادية ، مواد ، أشخاص) لتقديم التدريب الأخضر.					
5	تحدث دورات تدريبية خضراء داخل البنك.					
6	تحدث جلسات التدريب الخضراء خارج البنك.					
7	هناك تقييمات كافية لأداء الموظفين بعد حضور جلسات التدريب الخضراء.					
8	بشكل عام ، يشعر الموظفون بالرضا عن التدريب الأخضر المقدم.					

9	الموضوعات التي يتم تناولها خلال التدريب الأخضر مناسبة وحديثة لأنشطة البنك.					
10	الموظفون الذين يتلقون تدريبا أخضر لديهم الفرصة لتطبيق المعرفة الخضراء في الأنشطة اليومية.					

جـامعـــة النجاح الوطنية

كليـــة الدراســـات العليـــا

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إعداد

انوار عزات بركات

إشراف

د. محمد عثمان

قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في الإدارة الهندسية، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس– فلسطين.

2024

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الملخص

لقد أدى الطلب المتزايد الملحوظ على الأداء البيئي في القطاع المصرفي إلى خلق حاجة هائلة لدراسة كيفية تأثير الممارسات الخضراء على الأداء البيئي. تهدف هذه الدراسة إلى التحقيق في تأثير رأس المال الفكري الأخضر (GIC) والابتكار الأخضر (GI) والتدريب الأخضر (GT) على الأداء البيئي (EP) في القطاع المصرفي الفلسطيني، وتوفير رؤى لتحسين ممارسات الاستدامة. تضمنت خطة أخذ العينات لهذا البحث اختيار 97 مديرًا من 12 بنكًا فلسطينيًا مختلفًا كمجموعة مستهدفة، نظرًا لمشاركتهم المباشرة في تنفيذ المبادرات الخضراء. تم استخدام نهج بحثي كمي، وتم جمع البيانات من خلال استبيانات منظمة. تم تحديد حجم العينة لضمان مجموعة تمثيلية من الموظفين عبر بنوك متعددة، مع التقاط وجهات نظر GIC وGI وG المتنوعة. سمحت هذه العينة باستخدام تقنيات نمذجة المعادلات الهيكلية (SEM) لتحليل العلاقات بين المتغيرات. تؤكد النتائج على وجود علاقة قوية وإيجابية بين رأس المال الفكري الأخضر والأداء البيئي، مما يعني أنه كلما التزم البنك بالمبادئ البيئية، زادت احتمالية تسجيل نتائج بيئية أفضل. علاوة على ذلك، تثبت النتيجة وجود علاقة إيجابية بين GI وEP. تسلط هذه النتيجة الضوء على أهمية أنشطة الابتكار في الحفاظ على بيئة مستدامة. كما تؤكد الدراسة على أهمية GT في تعزيز رأس المال الفكري الأخضر وGI وفي تعزيز ثقافة التنمية البيئية. هذه الدراسة مفيدة لصناع السياسات وإدارة البنوك في فلسطين حيث يمكنهم تطبيق

بعض التوصيات بشأن الممارسات المستدامة في النظام المصرفي. ستساعد النتائج في توسيع نطاق المعرفة بمفهوم الاستدامة في سياق المجال المصرفي وتوفير أساس إضافي لمزيد من التحقيقات في إنشاء ممارسات مستدامة في القطاع المالي.

الكلمات المفتاحية: رأس المال الفكري الأخضر، الابتكار الأخضر، التدريب الأخضر، الأداء البيئي، نمذجة المعادلات الهيكلية الجزئية للمربعات الصغرى(PLS-SEM) ، القطاع المصرفي.