

THE GREEN BANKING OPERATIONS AND THEIR ROLE IN ACHIEVING SUSTAINABLE BANKING PERFORMANCE IN BABIL GOVERNORATE

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Abstract

Introduction to the Problem: The concept of green banking has gained significant importance. Green banking operations refer to banking practices focused on environmental sustainability and social responsibility. These practices not only benefit the environment but also have a positive influence on overall sustainable banking performance.

Purpose: This study aims to examine the nature of green banking operations and their impact on banking performance.

Methodology: A quantitative study was conducted using a structured questionnaire distributed to a sample of customers of three banks in Hilla city (Baghdad, National Bank of Iraq, and International Development Bank) during the period from April 15 to May 15, 2025. 100 questionnaires were distributed, and 10 were excluded for incompleteness, leaving 90 questionnaires valid for statistical analysis.

Findings: cutting energy, trimming paper, moving to online banking services, funding eco-friendly initiatives all help banks run smoother. These changes to how banks operate to improve customer experience also reduce costs and can boost a number of performance markers while being clearly felt by the organisation.

Paper Type: Research Article

Keywords: *Green banking; sustainable bank performance; Iraq.*



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INTRODUCTION

Green banking practices represent an important opportunity for sustainability in banking operations through applying environmental sustainability policies to reduce pollution and carbon emissions, in addition to investing in and promoting renewable energy and green businesses to achieve a successful brand image, attract the environment-conscious customer, and achieve sustainable long-term profitability. The Central Bank of Iraq (CBI) has begun to follow up the matter in order to introduce the concept of Green banking operations and apply sustainability in banking operations, and in order to reduce the environmental damage and negative effects on the climate and the environment. In order to achieve this goal, the CBI collaborated with the International Finance Corporation (IFC) to launch a Roadmap for Sustainable Finance 2023–2029 and an Environmental, Social, and Governance (ESG) code that aims to encourage banks to introduce sustainable banking products and enhance banks' and financial institutions' environmental and social risk management practices.

In order to promote the shift from heavy fuel oil to alternative fuels, the CBI granted concessional financing of up to IQD 500 mln per facility to brick factories, as part of the Green Credit Programme designed to support the development of clean industry. A further IQD 1 bln were allocated to the Environmental Protection Fund. Furthermore, the Central Bank of Iraq launched the "Trillion-Dinar Initiative for the Financing of Environment-Friendly Projects in the Field of Renewable Energy, Recycling and Sustainable Agriculture". New licenses were issued to two new banks with a climate focus, namely the "Green Bank" and "Bank al-Riyada". To build the capacity of institutions involved in the promotion and delivery of credit for environmentally sustainable development projects, the CBI partnered with the International Labour Organization to deliver green microfinance training in Erbil for financial institutions targeting small and medium enterprises (International Labor Organization, 2009). The CBI green banking model brings together a comprehensive regulatory framework, direct financial support, specialist environment focused institutions and skills training.

Although this model strikes the perfect balance between environmental preservation and economic performance, there is a substantial research gap regarding its applicability in the particular and difficult context of the Iraqi banking industry, especially at the regional level where there aren't many specialized studies. The main research issue is that the precise operational procedures and mechanisms that allow Iraqi banks to accomplish this synergy between financial performance and sustainable banking operations are still systematically unexplored, and it is still unclear how the local economic and legislative environments affect the adoption of these models.

By identifying and evaluating particular banking procedures and tactics that help achieve sustainable performance, as well as evaluating the internal and external elements that could either facilitate or impede this change, this study seeks to close this gap. By analyzing a sample of Babylon banks, specifically the Hilla branch, because Hilla is considered the biggest industrial governorate in Iraq, and green banking activities could contribute to enhancing the environmental bank performance, which leads to achieving sustainable banking performance. This study offers useful information that can be used to comparable situations.

LITERATURE REVIEW

Green Banking Operations

Green banking operations encompass a broad spectrum of eco-friendly initiatives within banks from implementing paperless processes and energy efficient systems to offering green loans, digital services, and environmental training programs. By the researchers Issa et al., (2022) analyzed the relationship between corporate governance in Islamic banks and environmental stewardship in Iraq, finding that strong governance practices significantly improve the efficiency of green banking and thereby support overall banking sustainability. Al-Badran (2022) conducted an analytical study of green financing among 15 private banks listed on the Iraq Stock Exchange during 2018–2020; this research identified three financing trends (increase, decrease, stability) and recommended that banks allocate greater shares toward green economy projects to bolster both financial and environmental sustainability. Amir & Albanaa. 2019. "The Way Forward for the Iraqi Banks to Adopt Sustainable Practices." A Case Study Conducted on Five Banks in Iraq. Employee View on Implementation of Green Practices. Found to be limited to yearly performance evaluation; and Suggestions for Better Adoption of Green Practices including the importance of training programs and green integration into the on a day-to-day banking activity to ensure sustainability.

Green banking refers to a host of activities which Banks and other financial institutions carry out to reduce environmental impacts of their dealings. Green banking can be carried out by all levels of banks from commercial Banks to credit unions and even community Banks. Implementing green projects and activities promotes sustainability and environmentally conscious banking operations. Some examples of green banking practices are offering environmental products such as green loans and green mortgages, investing in sustainable energy projects like solar and wind power, and implementing practices and technologies that are energy efficient and sustainable electronic statements and online transactions, Engaging in corporate social responsibility activities that benefit the environment and local communities (Thapliyal et al., 2025).

In promoting sustainable development and combating global warming, green banking plays a pivotal role. By investing on renewable energy projects, banks can reduce carbon emissions to save the planet from drastic climate change. In addition, offering green financial products such as eco-friendly loans and savings accounts can motivate customers to make sustainable choices in their financial decision (Chen et al., 2022). Implementing green banking operations can have a positive impact on a bank's sustainable banking performance. By reducing their environmental footprint and promoting sustainability, banks can enhance their reputation, attract environmentally conscious customers, and achieve long-term profitability (Sutrisno et al., 2024).

There are a number of events that have prompted the establishment of green banks, the most prominent of which are: (a) The financial crisis: In 2008, it triggered the most severe recession since the Great Depression of 1930. In 2009, the number of unemployed people worldwide exceeded 50 million, above the level recorded in 2007. Every 1 percent decline in growth in developing countries translates into an additional 20 million people (International Labor Organization, 2009); (b) Climate change due to carbon dioxide emissions: Carbon dioxide in the atmosphere is already reaching a critical threshold, requiring immediate and radical action. The world's poor are highly vulnerable to rising sea levels caused by climate change, coastal erosion, and recurring storms (Kumar et al., 2016); (c) High oil prices: Recording nearly \$150 per barrel, although the outbreak of the financial crisis and subsequent recession caused a significant correction in the price of oil to below \$40 per barrel, the fuel crisis remains a reality; (d) Food crisis: In 2007, rising food grain prices cost developing countries \$324 billion, equivalent to three years' worth of global aid. Although the recession has led to a decline in food prices, the issue of food security cannot be overlooked. To feed a growing population, global food production must double by 2050 (Popkin et al., 2017); (e) The ongoing water crisis: One in five people in the developing world lacks access to sufficient clean water, and at the same time, demand for water is increasing for competing uses. Water availability in many parts of the world will be increasingly affected by climate change, changing patterns of rainfall, melting glaciers, and droughts (Popkin et al., 2017).

Green banking represents a set of activities and practices aimed at reducing the environmental impact of banking activities and providing sustainable financial solutions. The following are the most important dimensions of green banking (Choudhury et al., 2021): (a) Green financing: This includes providing loans and financing for projects that focus on environmental sustainability, such as renewable energy projects (such as solar and wind energy), sustainable agriculture, and waste management. This type also aims to support the green economy and

encourage environmentally friendly activities; (b) Electronic banking services: Reducing reliance on paper and traditional materials by offering digital services such as online banking, smartphone banking applications, and self-service banking; (c) Reducing paper waste: One of the essential dimensions of green banking, it reflects banking institutions' efforts to reduce reliance on paper documents in their various daily transactions and replace them with electronic and digital systems. This trend stems from the need to promote environmental sustainability and reduce the traditional banking activities on the environment, particularly with regard to the consumption of paper and associated natural resources such as trees, water, and energy. Energy consumption rationalization is one of the elements of green banking operations. Energy rationalization for banks means minimizing the required electrical and thermal energy for bank operations without compromising on efficiency and service quality. Reducing energy consumption at banks from now on is no longer a choice; it has become a responsibility for rationalizing energy usage as part of modern concepts of sustainability and environmental responsibility that affect banks' profitability and overall financial sector's environmental impact.

With a view to adopting fundamental green banking practices to address some of the under addressed issues, this research is significant for several reasons. First, from a perspective of comprehensive development, the research examines the interface between environment and green business operations with a view to how commercial activities could impact the environment and, consequently, stimulate economic development. Second, the research aims to enhance banking institutions' performance through the analysis of the green financial and non-financial banking practices and their impact on bank performance for increased market competitiveness. (c) Environmental awareness: It explores the expansion of services and stakeholder engagement linked to green initiatives and social responsibility; (d) Organizational and legislative development: The study proposes policy frameworks that can guide regulatory and legislative bodies to effectively support green implementation; (e) Academic contribution: It adds valuable insights to the limited body of literature on green banking's impact within the Iraqi banking context, helping to fill a significant research gap.

Banking performance is a measure of how well a bank uses its resources to accomplish its planned goals. Market indicators and generally accepted accounting standards are used to measure it. The return on assets (ROA), which calculates profitability in relation to total assets, is the most well-known of these metrics (Jadah et al., 2016). The market-to-book value (P/B) and price-to-earnings ratio (P/E) are two additional indicators that support the market value-based assessment (Bank, 2010). In order to identify discrepancies and put corrective measures

in place to improve the economic unit's performance, performance measurement compares actual outcomes with predetermined goals. As a result, banking performance is more than just a financial result; it also shows how well banks work within their operating environment to accomplish their strategic goals (Haidar, 2020).

It can be said that the process of evaluating bank performance means establishing a measure by which to assess the extent to which a bank has achieved the objectives for which it was established, comparing those objectives with planned objectives, identifying and determining the extent of deviations and methods for addressing them. Alternatively, it can be defined as a tool used to assess project activity with the aim of measuring the results achieved and comparing them with previously planned objectives, with the aim of identifying deviations, determining their causes, and determining the means to address them (Al-Husseini, 2025). This study utilize return on assets to measure the banks' performance for the selected sample banks.

Moreover, Abbood & Naema (2023) utilised a 50-item, five-point Likert questionnaire across a sample of Iraqi banks, revealing a statistically significant link between the adoption of green banking products and environmental sustainability. They emphasised that banks possess the capacity to increase their environmental contribution and called on the Central Bank and Ministry of Finance to collaborate on a comprehensive roadmap toward green banking transformation. Likewise, Hammou (2021) examined green and sustainable financial practices through a survey of bank managers at Mosul Development and Investment Bank, a private Iraqi bank. The results showed a general lack of awareness concerning various green financial components. Further research is necessary to achieve greater awareness and lift barriers to the adoption of green financial practices and products. The Central Bank of Iraq has partnered with the International Finance Corporation (IFC) to sign a sustainable action plan, 2023–2029, including an ESG risk-management framework and promoting sustainable products and financial services in order to enhance the infrastructure of the national financial sector.

With the increasing environmental challenges the world is facing along the transition to sustainable development, Iraqi banks, especially those operating in Babil Governorate, are needed urgently to adopt green banking practices and achieve sustainable profits while reducing environmental impacts. Despite its importance, there are many obstacles prevent green banking from developing, including: lack of awareness among banking staff about green banking; lack of legislative and regulatory framework to support green banking; lack of investment in environmental technologies; lack of measures to assess the impact

of environmental activities on banks' performance. This study aims to explore objectively the impact of green and environmental banking practices on performance of Iraqi banks operating in Babil Governorate, in addition to identifying the\ main obstacles affecting this relationship.

METHODOLOGY

The current research is based on quantitative approach through survey by using questionnaire as an instrument in order to achieve the study objectives. The study was conducted in three commercial banks in Hilla City which are Bank of Baghdad, National Bank of Iraq and International Development Bank in Babil Governorate. Data collection was done during a period of 30 days from 15th of April 2025 till 15th of May 2025. A total of 100 questionnaires were distributed during study period and 10 of them were invalid due to incomplete answers. Thus, 90 questionnaires included in the analysis. The study population and sample consist of customers of Hilla branches of studied banks of the three banks.

For the analysis of collected data from respondents, the current study utilized the Statistical Package for the Social Sciences (SPSS) version 24. Statistical analysis were conducted to find a meaningful relationship and interaction of the variables studied. At research, the level of significant was $p \leq 0.05$. By utilizing SPSS v. 24, the researcher could obtain reliable and accurate data in the form of quantitative results that support the finding and conclusion of the research.

The study aims to identify the impact of the green banking activities on enhancing the performance of Iraqi banks operating in Babil Governorate, which represents one of the Iraqi governorates. The study depends on the field research to reach the suitable recommendation that enhance the Iraqi banks performance. A questionnaire was prepared and used to collect the necessary data. Its content validity and reliability test were done. The results revealed positive correlation between the items of the tool with the study variables and the study tool is valid and reliable. The internal consistency test revealed very strong positive correlation between the study tool items and the study variables (performance of sustainable banking). The reliability coefficient (Cronbach's Alpha) for the tool as a whole was 0.869. While, the dimension of green finance was 0.877, the dimension of financial sustainability was 0.890.

RESULTS AND DISCUSSION

The Relationship Between Green Banking Operations and Sustainable Banking Performance

Mollah & Zaman(2015) found that the adoption of green banking operations has significant positive impact on sustainable banking

performance. Sustainable banking is not just limited to generating profit for shareholders but also encompasses balanced social responsibility and environment friendly practices. Green banking practices render its sustainability by way of saving cost through energy efficient technology, customer service and paperless banking, mitigating risks by identifying environmental risks, gaining competitive advantage by providing Eco-friendly products and services and creating sustainable reputation through corporate social responsibility. Table 1 illustrates the sustainability and performance of green banking practices at large.

Table 1. The Correlation Between Green Banking Operations and Banking Performance at The Macro Level

Green Banking Operations	Variable
0.710*	Bank performance

Source: Researcher (2025)

The statistical analysis of the studied sample of banks operating in Babil Governorate revealed a strong positive correlation between green banking activities and banks’ performance. The Pearson correlation coefficient was 0.710 in a level of significance $p \leq 0.05$. This means that green banking activities, through introducing environmentally related services, energy saving, reducing paper consumption, digital transformation, and financing environmentally positive projects help improve performance indicators of banks where these activities are applied. Moreover, these activities help reducing costs and improve customers satisfaction.

The current correlation between Iraqi banks and the environment is becoming more apparent, and this correlation is growing due to the increased awareness of Iraqi banks of the importance of integration of environmental considerations into their plans and operations, which is due to the global trend in sustainable finance. Green banking is one of the strategic alternatives for banks in Iraq to enhance competitiveness and sustainability. However, green banking is not restricted to environmental concerns; rather it has become a strategy to enhance overall bank performance. Therefore, bank management should earnestly develop and integrate sustainable policies that include environmental aspects into their institutional plans.

The following table details the relationship between green banking activities and bank performance.

Table 2. The Correlation between Green Banking and Performance of Banks at D Level

Dimensions of green banking operations					Variable
Total index	Rationalizing energy consumption	Reducing paper waste	Green finance	Electronic banking services	
*0.710	*0.682	*0.665	*0.695	*0.703	Total index

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Source: Researcher (2025)

Based on the previous table (2) we find a strong, positive and significant correlation between all the dimensions of green banking practices and Banking Performance Index. The significance level ($P \leq 0.05$) indicate that all correlation coefficients are significant at least at the mentioned level. Interestingly, the correlation is highest for the dimension of electronic banking services at 0.703. This could be attributed to various reasons such as increased efficiency in performance through provision of digital services to wider customer base while reducing physical intervention and minimizing the use of paper-based channels.

The correlation between green finance and performance of banking sector was 0.695. These dimensions reflect how banks finance environmental projects and sustainable development and also how they increase their reputation and introduce a new market of investments. The dimension of energy conservation also obtained 0.682, which reflects how dependence on the traditional sources of energy affects the operational costs of banks in the long run and thus how these costs affect their performance. Furthermore, the dimension of reducing paper waste obtained 0.665 and indicates how positive internal environmental practices can affect the performance of banking sector through enhancing their efficiency. Hence, it can be said that green banking operations are not just an environmental approach; they also positively affect banking performance in increasing operational efficiency, reducing costs, enhancing customer satisfaction and bank competitiveness in market, which is gradually shifting from traditional approach to sustainability approach.

Tabel 3. Results Of the Impact Relationship Between Green Banking Operations and Banking Performance At the Aggregate Level

Variables	Green Banking Operations		R ²	F		T	
Bank Performance	B ₁	B ₀		The Calculated	Tabular	The Calculated	Tabular
	0.780	0.620	0.850	*30.420	3.200	*7.320	2.250

Source: Researcher (2025)

Based on analysis findings, the regression model able to explain 85% of variation in banking performance due to variation in intensity of green banking operations. The impact coefficient value of B₁ = 0.780 shows that there is positive and significant impact between the intensity of green banking operations and banking performance. The calculated F value is 30.420 greater than the table value of 3.200. The T value 7.320 is bigger than the table value 2.250.

Tabel 4. Results Of the Relationship Between Green Banking Operations and Banking Performance at the Aggregate Level

Variables	Bank Performance ROA	R ²	F		T	
			Calculation	Tabular	Calculation	Tabular
Rationalizing Energy Consumption	0.755	0.695	*24.876	3.687	*7.420	2.740
Reducing Paper Waste	0.681	0.643	*19.450		*6.930	
Green Financing	0.681	0.602	*17.328		*6.450	
Electronic Banking Services	0.720	0.571	*15.772		*6.180	

Source: Researcher (2025)

The results of the multiple regression showed a positive relationship between dimensions of green banking and banking performance.

All the dimensions of green banking explained variation in banking performance as shown in the statistical table for outputs of SPSS v24. These dimensions accounted for a reasonable percentage of variation in performance in banking. The highest explanation for variation in banking performance came from the "Energy Consumption Rationalization" (0.695 or 69.5%). The impact coefficient (B1) of 0.755 was positive, showing that reducing energy consumption in the bank would boost its performance. Both calculated values of F and T test were significant at $P \leq 0.05$ level.

The "Paper Waste Reduction" dimension also brings great results, with R^2 of 0.643 and B1 of 0.681, which means that the shift to electronic transactions and the reduction of paper use contributes to service quality and waste reduction of resources. Other values also corroborated the issue's results and its strong significance statistically. Regarding "green financing", it also brings great results, with R^2 of 0.602 and B1 of 0.705, which means that banks' support to environmental and sustainability projects strengthen the competitiveness and customer trust in them, and still serve as a tool to reduce financial risks in traditional segments.

Finally, "electronic banking services" showed significant impact, with moderate size, explained by R^2 (0.571) and B1 (0.720). This means that customer satisfaction and service efficiency can be enhanced through the bank's services offered through environmentally friendly electronic media, given the current trend of digitization and environmental concern in banking activities.

Green banking operations in all its dimensions play an important role in achieving better performance for banks. Therefore, management of Iraqi banks must formulate green policies and instructions that govern the sustainable banking operations which aim at achieving economic objectives while protecting the environment. Green banking operations play a great role in promoting sustainability in banking business. Adopting environment-friendly practices and contributing to sustainable development will help banks to build sound reputation and attract customers in order to achieve their short and long-term goals. It is crucial for banks to prioritize green banking operations to create a more sustainable future for the industry and the planet.

DISCUSSION

The findings of Table 4 indicate that the impact of energy conservation on bank performance, measured by return on assets (ROA) in Hilla banks. This finding is consistent with the resource-based value theory (RBV), which suggests that unique resources (such as green efficiency) create a competitive advantage (Barney, 2015). This finding is supported by a study by Jada et al., (2021), which confirmed that

sustainability practices enhance the performance of Iraqi banks. In contrast to international studies that focus on the role of demand in developed markets, this research highlights that cost reduction and risk management are the main drivers of adopting green practices and improving profitability in the Iraqi context.

Furthermore, based on the results of Table 4, the positive impact of paper waste reduction on return on assets (ROA) in Hilla banks is consistent with stakeholder theory Freeman (2015), which links financial performance to addressing societal and environmental concerns. This finding supports previous studies, such as Risal & Joshi (2018), on the role of green banking practices in enhancing environmental performance. While, international studies focus on customer marketing appeal, the results of this research demonstrate that the primary improvement mechanism in the Hilla context is the reduction of direct operating costs (saving paper, printing, and storage), which immediately and tangibly boosts net income. It also highlights the importance of internal process efficiency as a competitive strategy in developing economies, where environmental efficiency is directly linked to financial efficiency.

Table 4 shows that green financing enhances the performance of Babylonian banks by diversifying revenues and rationalizing risks, in accordance with the stakeholder theory that supports reputation and loyalty. A study by Thapa & Dhakal (2025) in Nepal confirms the association between green finance and bank performance. Taneja & Özen (2023): Green financing is supporting environmental performance in Haryana-India. Green finance therefore becomes a strategic tool for banks to edge out competitors and source eco-sensitive funds. It will also help the banks to manage portfolio risks emanating out of climate change whilst boosting bank's bottom line towards sustainable growth.

The findings of Table 4 indicate positive relationship direction regarding the impact of implementing e-banking services on banks performance as evidenced by Al-Sharakan for Electronic Banking in Babylon. The results indicate reduction in operational costs, in addition to increasing customer base. Consequently, the overall bank performance in terms of return on assets (ROA) is improved. Consistent with the two theories, the results indicate that the technical infrastructure of e-banking represents strategic resources to banks (resource theory; Barney, 2015), while reducing transaction costs (transaction cost theory; Williamson, 1981). The results are consistent with similar studies conducted in other comparable countries, e.g., Kenya (Mwakera et al., 2024), Nigeria (Oyewole et al., 2013), to ensure strategic future growth of banks in the Babylon.

CONCLUSION

The study found strong and significant correlation between the adoption of the bank's green banking operations and banking performance. The findings suggested that the adoption of environmental practices in banking activities would enhance financial and operational performance, particularly rationalizing energy consumption and reducing paper usage to achieve greater efficiency and cut costs. In addition, green financing would also serve to support sustainability and enhance performance by providing alternative income sources and reducing risk for the bank through more diversified services in addition to those of the traditional sectors. Furthermore, the study also found that electronic banking services that are environmentally friendly support operational efficiency and customer satisfaction, especially in a market dominated by modern information technologies. Accordingly, green banking operations extend beyond environmental purposes to become a strategic approach to quality management that could help banks compete in the market, particularly in the Iraqi banking environment.

The findings of the study support a set of recommendations. These include urging Iraqi banks to formulate an environmental strategy consisting of environmental objectives and performance indicators for their green banking activities and linking them to the bank's institutional development plan. Encouraging the bank to invest in energy-saving technology such as smart lighting systems, as well as adopting energy-efficient technologies and devices, and harnessing solar energy as an alternative and environment-friendly energy source. Speeding up the digital revolution and reducing paper usage through implementing electronic archiving systems and digital signatures and moving towards paperless transactions. Expanding the scope of green financing and introducing banking products and services that support and fund environmental projects in cooperation with government bodies and international organizations. Upgrading banking technology and information systems to offer customers environmentally friendly, safe and quick electronic services and meeting their market needs.

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