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THE IMPACT OF THE SHIFT TOWARDS GREEN FINANCING ON REDUCING COMPANIES' VULNERABILITY TO FINANCIAL CRISES.

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Abstract
This study seeks to examine the impact of transitioning to green finance on mitigating the financial fragility experienced by firms amid recurring economic and environmental crises. Utilizing a descriptive and analytical methodology—supported by case studies and credible international sources—the research explores the relationship between the use of green finance instruments, such as green bonds and eco-loans, and indicators of corporate financial stability.
The findings reveal that companies implementing green finance practices exhibit stronger financial resilience and greater risk management capacity compared to those relying on traditional financing models. Moreover, the study highlights that sustainability extends beyond environmental considerations, serving as a fundamental element in reducing financial volatility and enhancing firms' ability to withstand crises.
Based on these insights, the research concludes with a series of recommendations, most notably the importance of enacting policies that promote green finance and the development of sustainable financial instruments tailored to the diverse needs of companies—particularly in emerging markets.
Keywords: Sustainability, environmental finance, financial resilience.

Introduction

Many companies today face financial fragility and are highly vulnerable to economic fluctuations and financial crises, which threaten their long-term sustainability and growth. Green finance emerges as a strategic approach that can strengthen corporate resilience by promoting environmentally friendly and sustainable investment and financing practices.
This raises the central research question:
To what extent can the transition to green finance reduce firms' vulnerability to financial crises?

Theoretical Overview of the Main Concepts

The research objectives are summarized as follows:
1. Analyze the concept of green finance, its tools, and its role in the financial sector.
2. Analyze the relationship between green finance and the fragility of financial firms.
3. Evaluate the extent to which green finance can minimize risk and enhance financial resilience during crises.
4. Provide practical recommendations for companies wishing to adopt green finance as a tool to enhance stability.

The importance of research:
1. Academically: It contributes to the literature on green finance and financial fragility.

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2. Practically: It provides an analytical framework that helps companies and decision-makers adopt financing tools that reduce exposure to financial risks.
3. Economically: It supports sustainable development approaches and links them to the financial stability of institutions.

The research hypothesis formula is Hypothesis H1: There is a statistically significant negative effect between the adoption of green financing and the level of companies' vulnerability to financial crises.

Methodology

Methodology used:
Descriptive analytical method and applied (standard) study method.
Study sample:
Listed companies (e.g., companies listed on European or Asian stock exchanges)
Data collection tools:
ESG reports.
Financial databases (e.g., Bloomberg, Refinitiv, Thomson Reuters).
Annual sustainability reports.
Analysis tools:
Regression analysis using Panel Data.
Fragility indicators such as: Z-score, liquidity ratio, debt-to-equity ratio.

Discussion

The reference to previous studies is a solid base, constituting a scientific and knowledge edifice, which can be utilised in many ways, including addressing aspects that were not addressed in those studies, and can be adopted as a basis for subsequent studies, so this paper deals with a group of studies that the researcher collected and reviewed, which included axes related to the current research topic, namely internal audit, the international framework of professional practices, and in chronological order. Table (1) shows the most important studies that addressed the topic of green finance and financial fragility:

a) Iraqi Study

- Hussein et al., 2020

Title of the Study: Enhancing Financial Efficiency under IFRS Standards to Reduce Financial Fragility: An Empirical Study on the Reality of Crises in Iraq Using Data Envelopment Analysis

Type of Study: Published Research

Study Objectives: The study aims to demonstrate the variation in the relationship between financial efficiency and financial fragility in light of different levels of IFRS adoption during financial crises and other periods in the Iraqi private banking sector.

Methodologies Used: The study relied on two main scientific research approaches: the inductive method and the deductive method.

Main Conclusion: High financial efficiency contributes to reducing financial fragility; however, this effect is limited under IFRS adoption. This restrictive influence is more evident during periods of financial crises, while it is not significant before or after such crises.

- Mahmoud, 2023

Title of the Study: Measuring the Financial Fragility of Iraqi Banks: An Applied Study of Selected Iraqi Private Commercial Banks

Study Objective: This research aims to measure the level of financial fragility facing Iraqi commercial banks using the Z-Score model. The focus was on two banks out of 22 commercial banks listed on the Iraq Stock Exchange during the period from 2011 to 2020.

Methodologies Used: The study employed descriptive and analytical methods to examine data and information derived from the reports and financial statements of the selected banks. Furthermore, Microsoft Excel 2019 was utilized to test the research hypotheses and address the research problem in order to achieve the study's objectives.

Main Conclusions: Both banks showed high levels of financial fragility, which increased during the crisis period. The Gulf Commercial Bank exhibited higher fragility compared to the Iraqi National Bank. However, the Iraqi National Bank also showed elevated fragility levels relative to the Z-Score model benchmarks. The study recommended the adoption of the Z-Score indicators by banks and financial institutions to measure financial fragility and to help inform investors, lenders, and market participants about the strength of the institutions' financial positions.

b) **Arab Study**

Tashtoush et al., 2023

Title of the Study: The Role of States in Green Financing: A Study of the Gulf Cooperation Council (GCC) Experiences

Type of Study: Published Research in the *Iraqi Journal of Economic Sciences*

Study Objectives: The study aims to clarify and highlight the efforts exerted by the GCC countries in financing the green economy, building environmentally friendly economic projects, and contributing effectively to economic development. It also addresses the provision of resources for a healthy and sustainable environment and improving the quality of life in the region, which reflects the core issue of the study: the global efforts to preserve environmental and public health amid rising carbon emissions and other harmful substances.

Methodologies Used: The study employed the descriptive method to describe, analyze, and draw lessons from the various components and aspects of the subject.

Main Conclusions: The study presented recent data that illustrates the significant scale and critical role of GCC countries in building a green economy by financing numerous vital projects. This is especially important in a region rich in strategic resources such as oil, which continues to impact modern human life.

Green Finance

Introduction to Green Finance

In 1992, the United Nations Environment Programme (UNEP) partnered with several commercial banks to raise environmental awareness within the banking sector. UNEP regarded this effort as a pioneering collaboration between the organization and the financial industry. Over time, the initiative grew to encompass a broader range of financial institutions—including commercial and investment banks, as well as insurance companies—which began engaging in meaningful discussions on integrating environmental protection with sustainable economic development (Mohd & Kaushah, 2018, p. 64). It was within this context that the concept of *green finance* began to take shape.

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First: Definition of Green Finance

The German Development Agency (GIZ) defines green finance as the financing of public and private green investments—including upfront and capital costs—across various sectors. These include environmental goods and services such as water management, biodiversity conservation, landscape protection, as well as activities aimed at preventing, minimizing, and compensating for environmental damage The German Development Agency (GIZ) defines green finance as the financing of public and private green investments—including both upfront capital and operational costs—across various sectors such as environmental goods and services, water management, biodiversity conservation, and landscape protection. It also encompasses activities aimed at preventing, minimizing, and compensating for environmental and climate-related damage, while promoting sustainable economic growth and development (Lindenberg, 2014, p. 2).

Similarly, the G20 defines green finance as "finance that includes all forms of investment or lending that takes into account the bottom-line impact and promotes environmental sustainability" (G20, 2017, p. 20).

The International Finance Corporation (IFC) describes green finance as a range of investments and loans directed toward environmentally friendly projects that aim to protect the environment and conserve natural resources (IFC, 2022).

Second: Green financing objectives

Considering that green finance is one of the most prominent data and global stabilisation efforts for the transition to a green economy, which aims to achieve several goals at the social, economic, and interconnected level, namely (Cheberyaka Varmalii, Borysenko, & Miedviedkova, p4, 2021):

(1) On the social level

- Achieving well-being, social justice, improved lifestyle, and social development.
- Reducing inequality
- Equitable access to resources and meeting the needs of different members of society.

(2) On the economic level

- Boosting economic growth rates.
- Increase incomes and create jobs.
- Attract investment and create new economic activities.

(3) At the inter-level

- Minimise environmental risks.
- Optimising resource and energy efficiency
- Suspend the environmental responsibility of economic entities.

Third: Advantages of green financing: The most important advantages of green financing can be reviewed as follows: (Shaheen, 2020, pp. 137-138)

a) Supporting sustainable development

Green finance contributes to the realization of the Sustainable Development Goals by financing environmentally friendly projects, promoting a balance between economic growth and environmental conservation.

b) Stimulating innovation and clean technology

Green finance supports innovation in renewable energy and clean technology, contributing to the development of effective and sustainable environmental solutions.

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c) Improving the financial performance of banks

Studies have shown that adopting green finance strategies can improve banks' financial performance, by attracting new investments and enhancing their environmental reputation.

d) Minimise environmental and economic risks.

Green finance helps reduce the risks associated with climate change and environmental pollution, contributing to the stability of the national economy.

e) Promote financial inclusion.

Green finance contributes to expanding the customer base by providing innovative financial products that cater to the needs of different groups, including SMEs.

Fourth: Green financing tools: Some tools can be briefly reviewed by the following agencies: (ICMA, 2021) & (UNEP, 2016), (World Bank, 2020), (OECD, 2020)

(1) Green Bonds

A type of bond instrument where the proceeds or their equivalent are applied exclusively to finance or refinance green projects partially or fully .

(2) Green Loans :

Loans granted on favourable terms to support projects that achieve clear environmental objectives.

(3) Green Investment Funds

Funds that invest only in companies or projects with high environmental performance.

(4) Green Insurance

Insurance products that support environmentally friendly practices and minimise environmental damage.

(5) Green Sukuk

Islamic financing instruments dedicated to financing sustainable projects in accordance with Shari'ah.

(6) Blended Finance

A combination of public and private financing to support sustainable development projects, including environmental ones.

(7) Green Guarantees

Government or international programs to guarantee funding for environmental projects.

Fifth: The difference between green financing and traditional financing

Sustainable (green) finance simply means a profound shift in the way loans and financial contributions contribute to a greener, more equitable and sustainable future. Unlike conventional finance, which ignores the environmental impacts of a project, sustainable finance takes these considerations into account when making financial decisions, emphasizing support for economic and social growth, but minimizing environmental impacts and addressing social inequality while ensuring long-term sustainability, it is no longer just an ethical choice or a propaganda technique practiced by some It is no longer just an ethical choice or a publicity stunt practiced by some companies, but has become a critical global response to the various challenges that climate change imposes on everyone, while depleting resources and increasing social inequalities. (https://www.incarabia.com.)

Financial fragility

First: The concept of financial fragility

During global financial crises, banks experienced a significant increase in risk exposure, with their systems

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becoming increasingly vulnerable to insolvency—particularly in financially open and globally integrated economies. While major global banks faced severe disruptions, economic entities in developing countries were also deeply affected, confronting challenges no less serious than those encountered in developed nations. This reality has spurred growing interest in studying the fragility of financial systems within economic units, especially in the aftermath of the 2008 global financial crisis. In response, many studies have focused on analyzing the consequences of such crises, emphasizing the urgent need for safer, more resilient financial systems. However, the collapse of several major banks during crisis periods reveals the deep-rooted fragility embedded in these systems. This underscores the importance of not only addressing recurrent financial crises but also preparing for sudden external shocks that can trigger widespread and unforeseen financial instability (Al-Ta'iyo & Al-Jubouri, 2017, p. 540).

Financial fragility represents a stage in the financial system's deterioration, preceding potential bankruptcy and eventual market exit. Typically, a business begins as a small project, and through technological advancement, it expands its role and influence. Following initial success and increased profitability, optimism about future growth intensifies. However, such profit growth rarely continues unimpeded; it often encounters difficulties and external pressures imposed by the environment on financial systems across all sectors (Al-Taie & Al-Jubouri, 2017, p. 546).

In technical terms, financial fragility refers to the high sensitivity of items on both the asset and liability sides of the balance sheet (including both on- and off-balance sheet financing) to changes in interest rates, income, amortization schedules, and other factors affecting liquidity and solvency. Irregular fluctuations in these variables can lead to serious financial strain (Tymoigne, 2011, p. 2). Financially fragile firms are generally characterized by high leverage and low net worth, which increases their default risk significantly (Schroeder, 2009, p. 290).

Third: Causes of financial fragility

Financial fragility is a phenomenon that arises in the context of financial instability and can be expressed through situations characterized by the weak financial structure of institutions or individuals. Financial fragility is defined as a situation where borrowers are unable to generate sufficient wealth to match the size of the projects, they are financing. Such a situation leads to high agency costs, weakening the performance of the investment sector and negatively impacting the macroeconomy (Driffill, 2006: 5-6).

One of the most prominent causes of financial fragility is financial distress, which leads to a state of financial distress and is categorised into two main types (Abd, 2022: 36):

(1) Technical financial distress: It results from the mismanagement of assets compared to liabilities, where the value of assets is greater than liabilities, but due to the mismanagement of the financing structure, the organization is unable to meet its liabilities on time.

(2) True financial distress: Occurs when assets are less than liabilities, leaving the organisation unable to meet its financial obligations because of negative fluctuations in its returns.

Fourth: Indicators of financial fragility

(1) Z-Score

The financial literature usually uses the **Z-Score** as an indicator to measure financial fragility. Its value reflects the extent of financial stability achieved by financial institutions or, conversely, their financial fragility. A lower Z-Score indicates increased financial fragility, while a higher Z-Score suggests that the organization

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enjoys financial stability. The Z-Score measures standard deviations by summing the return on assets with the ratio of equity to total assets, then dividing by the standard deviation of the return on assets. It is calculated using the following formula (Ramady & Albinali, 2016, p. 65).

$$Z - score = \frac{\text{ROA} + \text{E}/A}{\sigma ROA}$$

Where: (ROA) return on assets, (E) equity, (A) total assets, and (σROA) standard deviation of return on assets. (Ramady & Albinali, 2016:65) Shareholder concentration has a direct impact on an organization's financial stability, as shareholders often exhibit conservatism regarding a specific equity-to-debt ratio. This imposes constraints on the organization's financial management and obliges it to maintain that ratio. Such constraints may increase the risk of financial distress, particularly if shareholders fail to adequately consider this aspect. As a result, management tends to focus on maximizing profits from operating activities to enhance financial stability.

The return on assets (ROA) ratio, calculated by dividing net income by total assets, reflects the profitability generated from each dinar of assets. Financial institutions that utilize their assets efficiently typically achieve a higher profit margin, which positively contributes to financial stability and reduces financial fragility (Christan, 2015). Additionally, the equity-to-total-assets ratio, along with income source diversification, plays a vital role in strengthening financial stability. Conversely, dependence on a single income source may elevate the risk of financial distress.

Financial fragility is also influenced by the size of an organization's operations; institutions with larger operational activities generally have a greater capacity to generate stable profits compared to those relying on traditional or limited activities (Albinli & Mohamed, 2011, p. 26).

2. Hedge, Speculative, and Ponzi according to the Minsky Accounting Framework

This indicator is known as the 'Minsky Accounting Framework' (Minsky Accounting Framework, as cited in Torres Filho et al., 2017). Minsky explained that a deep understanding of financial fragility requires a thorough analysis of both financial and non-financial conditions of companies.

This analysis is based on an examination of each company's portfolio, which is the sum of its physical and financial assets as well as its financial liabilities. Based on the degree of risk related to their ability to meet these obligations, Minsky categorised companies into three main categories:

Hedging companies: These are companies that can cover both their principal and interest obligations through their operating cash flows.

Speculative companies: They rely on refinancing to cover the principal, covering only the interest from their operating income.

Ponzi companies: They cannot cover either principal or interest from their cash flow and rely entirely on raising debt or selling assets to stay afloat.

According to Minsky, this categorization can be applied to all types of companies without exception, whether they belong to the financial or non-financial sector.

V: The relationship between financial fragility and sustainability

1. Financial fragility limits companies' ability to invest in sustainability.

Companies with poor liquidity or a high debt burden are less able to finance sustainability projects such as

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renewable energy or green digital transformation (UNEP, 2016).

2. Sustainable companies are more resistant to financial fragility.

Companies that apply sustainability principles (energy efficiency, environmental and social governance) tend to have resilient business models that minimise long-term financial risks. (World Bank, 2020)

3. Green finance contributes to reducing financial fragility.

By facilitating access to alternative financing instruments (such as green bonds and concessional loans), green finance enhances the long-term stability of companies. (ICMA, 2021)

4. Financially fragile companies are more likely to fail in the absence of sustainability practices.

During crises such as a pandemic or market volatility, studies have shown that companies that do not have cash reserves and do not apply sustainability principles fail faster. (OECD, 2020)

5. Sustainability reduces the volatility of financial performance and therefore fragility.

Adherence to sustainability standards enhances investor confidence and leads to a more stable financial performance, reducing earnings volatility and thus corporate fragility. (UNEP FI, 2015)

The practical side

First: Description of the study sample

- Society and its study sample - Data collection methods
- Study tool - Statistical methods used.
- Testing the validity and reliability of the study tool (questionnaire)

Second: The applied aspect (data analysis)

- Normal distribution test for data
- Statistical description of study variables

This chapter presents and analyzes the study data, including the characteristics of the study sample and the description of the study variables. It outlines the demographic and personal attributes of the respondents, along with the results of the statistical analysis of their responses. The analysis is based on the mean scores and standard deviations of all study variables, providing insights into the overall trends and patterns within the data.

a. Study population and sample.

The study community: The study population consisted of the employees of the heavy equipment company in the Iraqi economic units.

Study sample: The researcher adopted the purposive sampling method and distributed the questionnaire to the affiliates of the Heavy Equipment Company randomly with appropriate strata from all sides.

b. Data Collection Methods

The study adopted a descriptive-analytical approach to examine the information system within the study population. Additionally, a field study method was employed to achieve the study's objectives. Data were collected from two main sources: **secondary sources**, which include books, articles, and previous research; and **primary sources**, obtained directly from the field through surveys and other data collection tools.

a. Primary sources

It consists of collecting data through a questionnaire that was designed and developed to achieve the study objectives and research its hypotheses .

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b. Secondary sources

1. Books and resources related to Arabic and other languages.
2. Magazines, newspapers, reports, and periodicals
3. Previous research, studies, and theses that dealt with the topic of the study.
4. Searching for several websites.

c. Study tool

A questionnaire is a data collection tool that is described as a series of questions that a researcher asks a group of participants in order to obtain specific data about a particular topic or subject. Each questionnaire uses a distinct methodology. There are open-ended questions, to which anyone can respond as they wish.

The questionnaire was distributed consisting of demographic data (gender, age, educational qualification, years of experience) and three themes (e-payment usage, cybersecurity and data protection, e-payment efficiency, and its impact on financial transactions) Each axis consists of 5 questions as shown in Table (2). 107 questionnaires were distributed and 100% of the questionnaires distributed were returned.

Table (1) Distribution of questionnaire paragraphs

Main Dimension	Statements	Item Numbers in the Questionnaire
1. Use of Electronic Payment	- I prefer using electronic payment methods over cash in my daily transactions. - Electronic payment systems provide me with ease and speed in completing financial transactions. - I trust electronic payment systems when shopping online. - I find electronic payment services available and compatible with my needs. - I face difficulties using electronic payment systems due to complexity or lack of knowledge.	1–5
2. Cybersecurity and Data Protection	- I feel secure when using electronic payment methods to store my financial data. - Electronic payment systems provide strong verification procedures to protect users from fraud. - I am concerned about the possibility of my financial data being breached during electronic payments. - I rely on two-factor authentication techniques (OTP, fingerprint, facial recognition) when performing electronic transactions. - I believe financial institutions provide sufficient protection to ensure the security of electronic payments.	6–10
3. Efficiency of Electronic Payment and Its Impact on Financial Transactions	- Electronic payment reduces the time required to complete transactions compared to traditional payment methods. - Electronic payment systems help improve personal money management and expense tracking. - Using electronic payment helps avoid problems associated with cash handling such as money loss or currency counterfeiting. - I find the transaction fees for electronic payments reasonable and appropriate for the services provided. - Electronic payment systems allow me to access a wider range of financial services more easily.	11–15

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Source: Prepared by the researcher

Each variable was measured using a five-point Likert scale (1-5) consisting of:

Table (3) Five-point Likert scale for response level

Response Level	Strongly Agree	Agree	Somewhat Agree	Disagree	Strongly Disagree
Score	1	2	3	4	5

Source: Prepared by the researcher

d. Statistical methods used.

To answer the study questions and test its hypotheses, the researcher used the SPSS statistical package for social sciences, where the following methods were used:

First: Descriptive Statistics: This statistical method is used to describe the demographic and personal characteristics of the sample members, as well as to summarize their responses, by employing the following measures:

1. **Percentages and Frequencies:** Used to assess the distribution of categorical data.
2. **Mean:** Calculated to determine the average response of the sample to each questionnaire item.
3. **Standard Deviation:** Measures the extent to which responses deviate from the mean, indicating variability within the sample.
4. **Relative Importance:** Used to assess the significance of questionnaire items and study variable dimensions. This is categorized into three levels based on a five-point Likert scale for response options, calculated using the following formula:

Relative Importance = *(Upper Limit - Lower Limit) ÷ Number of Levels × 1.33 = (5 - 1) ÷ 3 × 1.33*.

The levels will be as follows:

1- If the arithmetic mean is (1 - 2.33), the level is low.
2- If the arithmetic mean is (2.34 - 3.67), the level is medium.
3- If the arithmetic means (3.68 - 5), the level is high.

e. Testing the validity and reliability of the study tool (questionnaire)

First: Validity of the study tool

The validity of the instrument was verified by presenting it to a group of academic arbitrators represented by members of the academic bodies of Iraqi universities with specialization.

Second: Stability of the study tool

The internal consistency of the measurement components and the degree of correlation between the measurement components and the stability in measuring the dimensions they all aim to measure are discussed in terms of the stability coefficient.

The internal consistency coefficient (Cronbach's alpha) of the study tool was (0.817), a value that indicates a very good level of internal consistency between the paragraphs of the tool, which reflects a high degree of reliability, which is an acceptable indicator of the reliability of the tool in measuring the variables of the study and achieving its objectives

Second: The applied aspect (data analysis)

The data of the study will be presented and analysed, where the characteristics of the study sample will be explained, the variables will be described, and the relative importance of the study items will be indicated. This chapter presents the results of the demographic and personal description of the study sample, as well as

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the results of the statistical analysis of the responses of the study sample through the arithmetic means and standard deviations of all study variables and the relative importance.

I. Testing the normal distribution of data

The demographic and personal characteristics of the study sample members in terms of gender, age, educational qualification, and years of experience are shown in the following table:

Table (4): Normal distribution test for the study sample

Variable	Category	Frequency	Percentage (%)
Gender	Male	50	46.6%
	Female	55	52.4%
	Total	**105**	**100%**
Age	Less than 30 years	98	93.3%
	31–40 years	6	5.7%
	41–50 years	1	1%
	Total	**105**	**100%**
Educational Qualification	PhD	1	1%
	Master's	4	3.8%
	Bachelor's	69	65.7%
	Diploma (Technical Inst.)	1	1%
	Other	30	28.6%
	Total	**105**	**100%**
Job Level	Director	3	2.9%
	Assistant Director	1	1%
	Programmer	49	46.7%
	Auditor	1	1%
	Other	51	48.6%
	Total	**105**	**100%**
Available Information about Green Finance	Very High	9	8.6%
	High	15	14.3%
	Medium	58	55.2%
	Low	23	21.9%
	Total	**105**	**100%**

Source: Prepared by the researcher based on SPSS program

It is clear from the results shown in Table 4 that (46.6%) of the sample members are males, which is the highest percentage compared to (52.4%) of the sample members who are females.

The results also showed that (93.3 per cent) of the sample members were less than 30 years old, (5.7 per cent) of the sample members were between 31 and 40 years old, and (1 per cent) of the sample members were between 41 and 50 years old.

The results also showed that the largest percentage of the sample members were doctoral degree holders (1%), master's degree holders (3.8%), then the third percentage of bachelor's degree holders (65.7%), diploma holders (1%), and the percentage of other degree holders.(%28.6) .

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The results also showed that the percentage of respondents who had very high knowledge about green finance was (8.6%), followed by those who had high knowledge (14.3%), followed by those who had medium knowledge (55.2%), and those who had low knowledge(%21.9) .

II.Statistical description of study variables

In this requirement of the study, the study variables and questionnaires are presented and described. The arithmetic means and standard deviations of the paragraphs were calculated by determining the degree of agreement and determining the relative importance of each paragraph.

The first axis: Transition towards green finance

To describe the conversion towards green finance, the researcher used arithmetic means and standard deviations, as shown in Table (5) below.

Table (5) Mean, standard deviation and coefficient of variation.

No.	Value Flow	Mean	Standard Deviation	Coefficient of Variation
1	Our company relies on financing tools directed toward environmental projects.	2.21	1.062	48%
2	Green finance is included in our long-term financing strategies.	1.91	1.001	52%
3	We receive incentives or support from financial institutions when adopting green projects.	2.45	0.920	37.6%
4	We consider environmental sustainability standards when presenting feasibility studies for new projects.	2.47	1.001	40.5%
5	We have a dedicated department for financing or following up on green investments.	3.06	1.142	37%
Total		**12.1**	**5.126**	

Source: Prepared by the student based on SPSS program

As shown in table (5) regarding the answers related to the questions of the first axis, the arithmetic means in the organization ranged between (3.06 - 1.91) and the overall mean was (12.1) while the overall standard deviation was (5.0). The paragraph 'We have a department specialized in financing or following up green investments.' was rated the highest with an arithmetic mean of (3.06), which is higher than the overall mean and a standard deviation of (1.142), and the paragraph 'Green finance" is included in our long-term financing strategies.' It came in second place with the lowest arithmetic mean of (1.91), which is lower than the general mean and with a standard deviation of (1.001). As shown in the table, the dispersion in the answers is low among the study sample members about the data flow dimension and its paragraphs, which reflects the view of the study sample members with their convergence on the importance of data flow, and there is also convergence in the arithmetic means, and the table shows the coefficient of variation for the above-mentioned paragraphs.

2. Axis Two: Adopting Corporate Sustainability Practices

The researcher used arithmetic means, standard deviations, and coefficient of variation to describe the paragraphs of the second axis, as shown in the table of results below:

Table (6): Mean, standard deviation, and coefficient of variation

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No.	Value Flow	Mean	Standard Deviation	Coefficient of Variation
1	The company applies environmentally friendly practices in its operational processes.	2.42	0.959	39.6%
2	Our top management cares about integrating sustainability into general policies.	2.30	0.911	39.6%
3	We issue periodic reports related to sustainability (e.g., ESG reports).	2.46	1.101	44.8%
4	An annual budget is allocated to improve the environmental and social performance of the institution.	2.16	0.982	45.5%
5	We undergo periodic external audits related to sustainability and social responsibility.	2.30	0.856	37%
Total		**11.64**	**4.809**	

Source: Prepared by the student based on SPSS program

As shown in Table (6) regarding the responses related to the adoption of organisational sustainability practices, the arithmetic means in the institution ranged between (2.46 - 2.16) and the overall mean was (11.64) while the overall standard deviation was (4.809) for the five-point Likert scale, as the paragraph 'We issue periodic reports related to sustainability such as ESG reports.') (2.46), which is higher than the overall mean with a standard deviation of (1.101), and 'We allocate an annual budget to improve the organisation's environmental and social performance. 'With an arithmetic mean of (2.16), which is the lowest mean and a standard deviation of (0.982), and as shown in the table above the criterion of difference for paragraphs (5) and we notice that there is a convergence in the arithmetic means .

3. Axis 3: The fragility of companies in the face of financial crises

To describe the paragraphs of the third axis, the researcher used arithmetic means, standard deviations, and the coefficient of variation, as shown in the results table below:

Table (7): Mean, standard deviation, and coefficient of variation

No.	Value Flow	Mean	Standard Deviation	Coefficient of Variation
1	We face difficulty sustaining operations during economic crises compared to our competitors.	1.85	0.886	47.9%
2	Financial crises significantly affect the company's cash liquidity.	2.08	0.851	40.9%
3	We suffer from significant fluctuations in revenue during critical periods.	1.88	0.874	46%
4	The company relies excessively on short-term financing.	2.37	1.012	42.7%
5	Previous crises have caused reductions in our investments or layoffs of some employees.	2.11	0.934	44%

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Total	**10.29**	**4.557**	

Source: Prepared by the student based on SPSS program

As shown in Table (7) regarding the responses related to the vulnerability of companies to financial crises, the arithmetic means in the organization ranged between (2.37 - 1.85) and the total mean was (10.29) while the total standard deviation was (4.557) for the five-point Likert scale, as the paragraph 'The company relies excessively on short-term financing.' was the highest rated with an arithmetic mean of (2.37) and a standard deviation of (1.012), as well as the paragraph 'We have difficulty surviving during economic crises compared to our competitors.' (2.37) which is the highest arithmetic mean with a standard deviation of (1.012), and 'We have difficulty surviving during economic crises compared to our competitors' with (1.85) which is the lowest mean with a standard deviation of (0.886), and as shown in the table above the criterion of difference for paragraphs (5) and we notice that there is a convergence in the arithmetic means .

a) The relationship between variables

Table (8): Pearson's coefficient test results

No.	**Variable**	**Description**	**Axis 1**	**Axis 2**	**Axis 3**
1	Axis 1	Correlation	1	0.525	0.521
		Significance		0.000	0.000
2	Axis 2	Correlation	0.525	1	0.766
		Significance	0.000		0.000
3	Axis 3	Correlation	0.521	0.766	1
		Significance	0.000	0.000	

****Correlation is significant at the 0.01 level (2-tailed).**

b) Analysis of study hypotheses

Main hypothesis H01: There is a statistically significant negative effect between the adoption of green financing and the level of companies' vulnerability to financial crises at a significance level of ($0.05 \geq \alpha$).

Table (9) Results of the multiple regression analysis test for the effect of the research hypothesis

Coefficients				**ANOVA**			**Model Summary**		**Dependent variable**
Sig.*t. Significance level	**T.**	**Standard error**	**B**	**Sig.* F Significance level**	**DF Degrees of freedom**	**F.**	**(R2) Coefficient of determination**	**(R) Correlation coefficient**	

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0.000	**4.891**	**1.104**	**5.400**	**Shift towards green finance**	**0.000**	**1**	**Regression**	**39.267**	**0.276**	**0.525**	**The fragility of companies in the face of financial crises**
						103	**Leftovers**				
0.000	**6.266**	**0.092**	**0.575**	**Adopting corporate sustainability practices**		**104**	**Total**				

Source: Rresearcher based on the results of the SPSS program.

The results of the regression analysis showed that the statistical model is statistically significant (Sig. = 0.000), and the results showed that the dependent variable (corporate vulnerability to financial crises) explains 27.6% of the variance in corporate vulnerability to financial crises ($R^2 = 0.49$). The unstandardised impact coefficient B = 0.575, which is statistically significant and reliable at the 0.05 level.

(4) Conclusions and recommendations:

First: Conclusions

1. Green finance contributes to strengthening the financial position of companies by providing concessionary sources of finance that support sustainable projects.
2. Companies that adopt green finance are more resistant to financial crises, as they rely on long-term and less volatile resources.
3. Financial fragility decreases as the adoption of sustainability standards, especially those related to environmental and social governance, increases.
4. Green finance not only promotes environmental sustainability but also improves financial performance and minimises operational risk.
5. The absence of incentivised legislation and policies hinders the spread of green finance instruments, thereby reducing the chances of reducing financial fragility in markets.

Second: Recommendations

1. Encourage the issuance of customised green finance instruments for SMEs, to support their resilience to shocks.
2. Integrate sustainability criteria into the credit assessment of organisations to minimise financial risks and support green projects.
3. Launch national awareness and training programmes on green finance, targeting the public and private sectors.
4. Provide financial and tax incentives to companies that use green finance tools in their operational and investment projects.
5. Strengthening the partnership between governments and financial institutions to create green support funds that facilitate the transition towards a sustainable economic model.

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