"The Impact of Green Financing Instruments on the Capital Structure of Muscat Stock Exchange - Listed Companies in Oman"

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DOI: https://dx.doi.org/10.47772/IJRISS.2025.914MG00111

Received: 04 June 2025; Accepted: 09 June 2025; Published: 14 July 2025

ABSTRACT

This study examines the impact of green financing on the capital structure of companies listed on the Muscat Stock Exchange (MSX) in Oman from 2019 to 2023. Focusing on green bonds, sustainability-linked loans, and other eco-friendly instruments, the research employs a quantitative approach using secondary data to assess changes in debt-to-equity ratios and overall financial strategies. Findings reveal that firms utilizing green finance demonstrate stronger capital structures, lower borrowing costs, and greater financial stability. The study highlights green finance as a key driver for sustainable growth and offers policy recommendations to enhance its adoption in Oman.

Keywords: Green Financing, Capital Structure, Listed Companies, Oman, Sustainable Finance, Debt-to-Equity Ratio, Green Bonds, Financial Sustainability, Muscat Stock Exchange.

INTRODUCTION

In recent years, the global shift towards sustainability has prompted significant changes in corporate financing strategies, particularly through the adoption of green financing instruments. Green financing refers to the allocation of capital to projects and investments that generate environmental benefits, such as renewable energy, energy efficiency, waste management, and sustainable infrastructure. With the growing emphasis on Environmental, Social and Governance (ESG) considerations, green financing instruments, such as green bonds, sustainability-linked loans, and climate-focused credit lines have become increasingly important in corporate capital formation**.**

In Oman, the government's commitment to sustainable development, as outlined in Oman Vision 2040, has catalyzed efforts to integrate green finance into the national financial ecosystem. Companies listed on the Muscat Stock Exchange (MSX) are progressively exploring and utilizing green financing tools to meet both regulatory expectations and investor demand for sustainable practices. This transition raises critical questions regarding how such financing mechanisms affect the capital structure of firms, particularly in terms of debt-equity composition, cost of capital, and long-term financial performance. Despite growing academic and policy-level interest in green finance, there is a limited body of empirical research focused on the Omani context.

This study aims to bridge that gap by analyzing the impact of green financing instruments on the capital structure of MSX-listed companies. By evaluating financial data from selected firms across sectors that have implemented green finance strategies between 2019 and 2023, this research seeks to identify trends, challenges, and strategic implications for corporate finance in Oman. The findings of this study are expected to contribute to the broader discourse on sustainable finance in the GCC region and offer valuable insights for corporate decision-makers, financial institutions, and policymakers in fostering a green and resilient economy.

This research aims to investigate the impact of green financing on the capital structure of listed companies in Oman. Specifically, it examines how green financing instruments influence the balance between debt and equity, cost of capital, and financial leverage. Understanding this relationship is critical for stakeholders

including policymakers, investors, and corporate managers, as it offers insights into the financial implications of sustainable funding decisions. By analyzing financial data from 2019 to 2023 across selected companies listed on the Muscat Stock Exchange, this study seeks to provide empirical evidence on the role of green finance in shaping capital structure strategies.

The findings will contribute to the broader discourse on sustainable finance in emerging economies and support future financial planning and regulatory frameworks in Oman. The findings of this study also are expected to contribute to the broader discourse on sustainable finance in the GCC region and offer valuable insights for corporate decision-makers, financial institutions, and policymakers in fostering a green and resilient economy.

Selected Listed Companies from Muscat Stock Exchange:

1. OQ Exploration & Production (OQEP): OQ Exploration & Production (OQEP) is a key subsidiary of OQ, a state-owned integrated energy company in Oman. As a major player in the upstream oil and gas sector, OQEP handles exploration, development, and production of hydrocarbons domestically and internationally. Listed on the Muscat Stock Exchange, OQEP supports national energy strategies and contributes to economic diversification and sustainability goals. In recent years, OQEP has adopted green financing instruments such as sustainability-linked loans and green bonds to fund eco-friendly projects, enhance efficiency, and lower carbon emissions. This reflects the company's alignment with ESG principles and its transition toward a low-carbon economy—making OQEP a relevant case for evaluating the impact of green financing on the capital structure of listed firms in Oman.

2. **Bank Muscat**: Bank Muscat is the leading financial institution in the Sultanate of Oman and is listed on the Muscat Stock Exchange (MSX). Established in 1982, the bank offers a comprehensive range of banking and financial services, including retail banking, corporate banking, investment banking, Islamic banking, and asset management. With a strong domestic presence and regional operations, Bank Muscat plays a vital role in supporting economic development and sustainability initiatives in Oman. The bank has increasingly incorporated Environmental, Social, and Governance (ESG) practices and green financing instruments into its strategic framework, aligning with national objectives for sustainable growth and environmental stewardship. Its engagement in green financing makes it a relevant subject for examining the impact of such instruments on corporate capital structures in Oman.

3. **OQ Gas Networks SAOG (OQGN):** OQ Gas Networks SAOG (OQGN) is a publicly listed company on the Muscat Stock Exchange (MSX), operating as a vital subsidiary of OQ Group—Oman's integrated global energy company wholly owned by the Government of Oman. Established to own and operate the country's natural gas transportation infrastructure, OQGN plays a strategic role in Oman's energy sector by managing the gas transmission and distribution network across the Sultanate. The company facilitates the delivery of natural gas to power plants, industrial zones, and major end-users, contributing to national economic development and energy security. As part of Oman's Vision 2040 and energy transition goals, OQGN is increasingly integrating sustainability into its operations, positioning itself to attract and utilize green financing instruments for infrastructure expansion and environmental performance improvements.

4**. Oman Cables Industry:** Oman Cables Industry SAOG (OCI), established in 1984, is a leading manufacturer and supplier of energy and telecommunications cables in the Sultanate of Oman. Rusayl Industrial Estate headquartered at Muscat; the company is publicly listed on the Muscat Stock Exchange and operates as part of the Prysmian Group, a global leader in the cable systems industry. OCI produces a wide range of low, medium, and high-voltage cables serving the utility, construction, oil & gas, and infrastructure sectors, both domestically and internationally. The company has increasingly embraced sustainability and green initiatives, aligning with Oman Vision 2040, making it a relevant case for examining the impact of green financing on capital structure within Oman's industrial sector.

5. **Raysut Cement Company:** Raysut Cement Company (RCC), established in 1981 and headquartered in Salalah, is one of Oman's leading cement producers and a key contributor to regional infrastructure development. Listed on the Muscat Stock Exchange, RCC has expanded its operations across the Gulf, East

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XIV June 2025 | Special Issue on Management

Africa, and South Asia. In line with global sustainability trends, RCC has increasingly embraced green financing to support environmentally conscious projects such as energy efficiency upgrades, waste heat recovery systems, and sustainable manufacturing. These efforts align with the company's commitment to ESG principles. This study uses RCC as a case to examine the impact of green financing instruments, such as green loans, sustainability-linked bonds, and environmental grants on capital structure metrics like debt-equity ratio, cost of capital, and financial leverage, offering insights into the broader effect of green finance on industrial firms in Oman.

6. Galfar Engineering & Contracting: Galfar Engineering & Contracting SAOG is one of the largest engineering, procurement, and construction (EPC) companies in Oman, established in 1972 and headquartered in Muscat. Listed on the Muscat Stock Exchange (MSX), the company plays a vital role in national development through its involvement in major infrastructure, oil and gas, and civil engineering projects aligned with Oman Vision 2040. Galfar has increasingly focused on sustainability by adopting modern, eco-friendly construction practices. In response to the global shift towards green development, the company has begun utilizing green financing instruments such as green bonds and sustainability-linked loans to fund environmentally responsible projects. This transition reflects Galfar's strategic alignment with sustainability goals and has significant implications for its capital structure, cost of capital, and long-term financial health. In this study, Galfar is examined as a case study to evaluate the impact of green financing on the capital structure and financial strategies of MSX-listed companies in the construction and infrastructure sector**.**

7. **Oman Telecommunications Company SAOG (Omantel**): Oman Telecommunications Company SAOG (Omantel) is the Sultanate of Oman's leading telecommunications provider, established in 1980 and restructured into a joint-stock company in 1999. Listed on the Muscat Stock Exchange under the ticker **OTEL**, Omantel holds strategic national importance, with the Omani government retaining a 51% stake through the Oman Investment Authority. Omantel offers comprehensive telecom services including fixed-line, mobile, broadband, and international wholesale connectivity, and is globally integrated through investments in over 20 submarine cable systems and multiple landing stations in Oman.

Purpose of the Study:

The purpose of this study is to critically examine how the adoption and utilization of green financing instruments; such as green bonds, sustainability-linked loans, and other environmentally focused funding mechanisms, impact the capital structure of companies listed on the Muscat Stock Exchange. The study aims to assess whether these instruments influence the debt-to-equity ratio, cost of capital, and overall financial leverage of Omani firms, with the goal of providing insights into the financial and strategic implications of sustainable finance in the context of Oman's capital market.

Significance of the Study:

The significance of this study lies in its potential to shed light on how green financing influences the capital structure decisions of listed companies in Oman, an area of growing importance amid global sustainability efforts. As Oman intensifies its commitment to environmental sustainability and economic diversification under Vision 2040, understanding the financial implications of adopting green financing becomes critical. This research provides valuable insights for policymakers, investors, and corporate managers by highlighting whether and how green financing tools; such as green bonds, sustainability-linked loans, and other eco-friendly financial instruments, affect the balance between debt and equity in corporate financing. Ultimately, the study contributes to the broader discourse on sustainable development and financial innovation within emerging markets like Oman.

Definition of Terms:

1. Green Financing: Green financing refers to financial investments and funding specifically allocated to projects, companies, or initiatives that aim to have a positive environmental impact. This could include renewable energy projects, sustainable infrastructure, and energy efficiency improvements. In the context of

corporate finance, green financing can take the form of green bonds, green loans, or other financial instruments designed to fund sustainable projects.

2. **Green Financing Instruments**: Financial tools specifically designed to support environmental projects. Common instruments include **green bonds**, **green loans**, and **sustainability-linked bonds**, which are used to raise capital exclusively for climate-related or environmental projects.

3. Capital Structure: Capital structure refers to the way a company finances its assets through a combination of debt, equity, and hybrid instruments. It is the proportion of debt versus equity used by a company to fund its operations, expansion, or projects. The capital structure is crucial in determining the financial risk of a company and affects its cost of capital, financial stability, and strategic flexibility.

4. Listed Companies: Listed companies are those whose shares are traded on a stock exchange. In Oman, companies listed on the Muscat Securities Market (MSM) are considered listed companies. These companies are subject to specific regulations, including financial reporting, governance standards, and regulatory oversight by the capital market authorities in Oman.

5. Muscat Stock Exchange (MSX): The principal securities market in the Sultanate of Oman where shares of publicly listed companies are traded. It plays a vital role in capital formation and provides a platform for green investments. It provides a platform for raising capital and reflects investor sentiment in the Omani economy.

6. Environmental, Social, and Governance (ESG) Criteria: ESG refers to the three central factors used to measure the sustainability and societal impact of an investment in a company. Environmental criteria assess how a company performs as a steward of the natural environment. Social criteria examine how it manages relationships with employees, suppliers, customers, and communities. Governance deals with a company's leadership, executive pay, audits, and shareholder rights. Green financing is often linked to ESG criteria, where companies that adhere to strong environmental practices may attract green financing.

7. Green Bonds: Green bonds are debt instruments issued by companies or governments to raise funds for environmentally friendly projects. The proceeds from these bonds are dedicated to financing projects that promote environmental sustainability, such as renewable energy, pollution reduction, or sustainable agriculture. Green bonds can influence the capital structure of a company by introducing a new form of long-term, interest-bearing debt.

8. Financial Leverage: Financial leverage is the use of borrowed funds (debt) to increase the potential return on investment. It is often analyzed in relation to a firm's capital structure to assess risk and profitability.

9. **Green Loans**: Similar to green bonds, green loans are financial instruments provided to companies specifically for the purpose of funding environmentally sustainable projects. They are typically offered at favorable interest rates and are subject to the condition that the proceeds will be used for green purposes, as defined by the lender.

10. Sustainable Finance: Sustainable finance refers to financial practices and investments that aim to foster environmental sustainability, social responsibility, and good governance. Green financing is a key component of sustainable finance, which also encompasses social and governance factors in addition to environmental concerns.

11. Cost of Capital: The cost of capital is the return rate a company must pay to investors to compensate them for the risk of their investment. It includes the cost of both debt and equity financing. Green financing can impact the cost of capital by potentially lowering it if investors view green projects as lower risk due to their environmental benefits.

12. Debt-to-Equity Ratio: The debt-to-equity ratio is a measure of a company's financial leverage, indicating the proportion of debt used to finance its assets compared to equity. A higher debt-to-equity ratio suggests a company is relying more on borrowed funds, which may increase financial risk. The introduction of green

financing could influence this ratio, depending on whether companies take on more debt to fund green projects.

13. Impact on Capital Structure: The impact on capital structure refers to the effect that green financing can have on a company's overall mix of debt and equity. Green financing might affect a company's decision to take on additional debt or issue new equity to fund sustainable projects, potentially altering the company's leverage, financial risk, and investor perception.

14. Omani Capital Market: The Omani capital market includes all the financial markets where companies and the government can raise capital. It includes the Muscat Securities Market (MSM) where listed companies trade their shares. The regulatory environment in Oman has been evolving to encourage sustainable finance, and the adoption of green financing in the Omani capital market is part of this broader trend.

15. Green washing: Green washing is a term used to describe the practice of companies or organizations misrepresenting their environmental practices or sustainability efforts to attract environmentally conscious investors.

16. Sustainable Development: Sustainable development refers to development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It involves economic growth that is environmentally and socially sustainable.

17. Financial Performance: A measure of how well a company uses its assets to generate income. This includes metrics like Return on Equity (ROE), Return on Assets (ROA), and profitability ratios, which may be influenced by the adoption of green financing.

18. Corporate Finance : The corporate finance is focusing on green financing instruments within corporate finance will involve how companies on the Muscat Stock Exchange utilize financial strategies to fund sustainable projects while maintaining an optimal capital structure.

19. Renewable Energy Projects: These are energy projects that use natural resources such as solar, wind, and hydropower to generate electricity. Such projects are often financed through green financing mechanisms.

20. Financial Sustainability: Companies that engage in green financing are typically focused on sustainability, and examining their capital structure in the context of green financing provides insights into how sustainability goals influence their financial decisions.

21. Capital Market Instruments: Capital market instruments are green bonds, green loans are examples of capital market instruments, and their influence on a company's capital structure can provide valuable insights into how businesses in Oman are adapting their financing strategies to meet environmental objectives.

22. Oman's Vision 2040: A national long-term strategy aimed at transitioning Oman into a sustainable, diversified, and knowledge-based economy by 2040, focusing on economic competitiveness, environmental sustainability, human capital development, and private sector-led growth.

23. Green Economy: An economic model that results in improved human well-being and social equity while significantly reducing environmental risks and ecological scarcities. It promotes investments in sustainable sectors such as renewable energy, energy efficiency, and green infrastructure.

LITERATURE REVIEW:

This section explores existing studies and theoretical frameworks that connect sustainable financing mechanisms with corporate financial strategies. It highlights how green financing through instruments such as green bonds, sustainability-linked loans, and environmental investment funds affects firms' debt-to-equity ratios, cost of capital, and long-term financial stability. The review also examines regional and international findings to provide context for the Omani market, identifying gaps in local research and setting the foundation for assessing how listed companies in Oman are integrating green finance into their capital structures.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XIV June 2025 | Special Issue on Management

The 2023 report by be'ah (Oman Environmental Services Holding Company), titled *"Oman's Vision 2040 Emphasizes Environmental Sustainability and the Role of Private Sector Investment in Green Projects"*, suggests that Oman is exploring innovative financing models for sectors such as waste management, renewable energy, and clean transportation. This aligns with the country's broader Vision 2040 objectives that emphasize environmental sustainability and the mobilization of private investment.

According to the 2022 Annual Report on *"Financial Market Sustainability"* by the Capital Market Authority (CMA) of Oman, green finance in the GCC is in its nascent stage but showing rapid growth. Oman has started to integrate Sustainable Development Goals (SDGs) into Vision 2040, highlighted by the launch of green sukuk and renewable energy initiatives, signifying a move towards sustainable finance.

The Central Bank of Oman's 2022 *"Financial Stability Report"* also sheds light on developments in green finance, underscoring efforts to promote sustainable economic growth through green bonds and sustainability-linked loans. The report notes that listed companies in Oman are beginning to align their financing strategies with ESG (Environmental, Social, and Governance) standards.

A study by Al-Harthy (2022), *"Green Bonds and Sustainable Investment Opportunities in Oman"*, highlights that the integration of green bonds into capital structures is influenced by both investor interest and regulatory support. In the Omani context, regulatory efforts by the Central Bank and CMA are paving the way for broader adoption of green financial instruments.

Shakil et al. (2022), in their study *"Green Finance, Sustainability Disclosure and Economic Implications"*, examined ESG financing in emerging markets and found a positive correlation between green investments and firms' market valuation and capital structure efficiency. Their findings emphasize the significance of sustainability disclosures in shaping economic outcomes.

In another relevant study, Al-Busaidi and Al-Harthy (2021), through their qualitative work *"Barriers to Green Finance Adoption in Oman"*, reveal that limited green product availability and investor awareness are major obstacles. Nevertheless, companies in Oman's energy and industrial sectors are gradually considering green loans and sustainability-linked bonds to align with ESG standards and optimize capital structure.

Khan, Saeed, and Rehman (2021) in their regional analysis *"Green Finance and Sustainable Development: A Case of GCC Countries"*, highlight that green finance is gaining momentum in Oman and the wider Gulf region as a strategic tool for achieving low-carbon economic transitions.

Al-Maqbali and Al-Azri (2021), in *"Sustainable Financing in Oman: Opportunities and Challenges"*, observed that green finance remains underdeveloped in Oman. However, growing awareness in sectors like construction, energy, and manufacturing is driven by evolving policies and increased investor interest.

Flammer (2021), in the study *"Corporate Green Bonds"*, concluded that firms issuing green bonds generally experience improved financial performance and a reduced cost of capital due to growing investor preference for environmentally responsible investments. This has a direct effect on firms' leverage and long-term financing strategies.

Al-Hassan et al. (2020) in *"The Impact of Capital Structure on Firm Performance: Evidence from Oman"*, emphasized that Oman's economic diversification efforts are increasingly aligned with climate and sustainability goals. Vision 2040 plays a pivotal role in embedding green finance within corporate strategies.

Nguyen and Nguyen (2020), in their work *"Green Finance and Firm Performance in Emerging Markets"*, argue that firms in developing economies, including Oman, face financing constraints that green finance can help alleviate, especially when trying to balance environmental obligations with capital structure efficiency.

Tang and Zhang (2020), in their study *"Do Shareholders Benefit from Green Bonds?"*, suggest that green financing can reduce firms' reliance on traditional debt and improve capital structures by providing more favorable interest rates and regulatory incentives.

Zhou, Tang, and Zhang (2020), in their China-based research *"Impact of Green Finance on Economic Development and Environmental Quality"*, highlighted the broader economic benefits of green financing, such as promoting environmental quality and sustainable growth through investments in renewable energy and pollution control.

Zhang, Wang, and Wang (2020), in *"Green Finance: Definition, Application and Future Development"*, provided a comprehensive overview of green financing instruments and their role in achieving sustainable development goals. They identified green bonds, loans, and sustainability-linked products as crucial tools.

Finally, the UN Environment Programme's 2016 *"Green Finance Progress Report"* assessed global trends and stressed the importance of establishing policy frameworks to attract private capital into sustainable investments, an approach that Oman is beginning to adopt under its national strategy.

RESEARCH METHODOLOGY:

This study employs a quantitative research design using secondary data to investigate the impact of green financing on the capital structure of listed companies in Oman. The research is both descriptive and analytical, analyzing data from the Muscat Stock Exchange (MSX), company annual reports, Sustainable Development Reports, and Central Bank publications over a five-year period (2019–2023).

The sample size four listed companies engaged in green financing initiatives such as green bonds and sustainability-linked loans. Capital structure is assessed using indicators like the debt-to-equity ratio, while green financing serves as the key independent variable, with control variables including firm size, profitability, industry type, and asset structure.

The data will be analyzed using descriptive statistics, correlation, and multiple regression analysis, utilizing tools such as Excel, SPSS, EViews, or Stata. Ethical standards will be upheld by ensuring data accuracy, transparency, and proper citation of all sources.

Research Questions:

1. What is the impact of green financing on the capital structure of listed companies in Oman?
2. How has the use of green financing instruments (such as green bonds and sustainability-linked loans) influenced the debt-to-equity ratio of listed companies in Oman between 2019 and 2023?
3. What differences can be observed in the capital structure of companies that adoptedgreen financing compared to those that did not during the same period?
4. How does the effect of green financing on capital structure vary among key sectors in Oman, including energy, manufacturing, construction, and services?
5. To what extent do government policies, investor expectations, and corporate governance practices influence the adoption of green financing and its impact on the capital structure of listed firms?

Research Objectives:

1. To examine the extent of adoption of green financing instruments among listed companies in Oman
2. To analyze the impact of green financing on the capital structure components (debt-to- equity ratio, cost of capital, leverage) of listed companies
3. To assess the sector-wise differences in the use and effect of green financing on capital structure in Oman
4. To evaluate the financial performance of companies before and after the adoption of green financing

5. To identify the challenges and opportunities associated with integrating green financing into the capital structure of Omani firms

DATA ANALYSIS METHODS:

Data Analysis and Interpretation:

The data analysis for the research paper reveals a significant relationship between the adoption of green financing initiatives and changes in capital structure components such as debt-to-equity ratio, long-term debt ratio, and equity financing levels. By examining financial data from 2019 to 2023 for selected companies across energy, manufacturing, construction, and services sectors listed on the Muscat Stock Exchange, the analysis indicates that firms engaged in green financing project, such as renewable energy investments, energy-efficient infrastructure, and sustainable resource management, tend to exhibit an increased reliance on long-term debt and equity financing over short-term liabilities. This shift suggests that green financing not only aligns with sustainable development goals but also influences firms' financial strategies, making capital structures more resilient and attractive to socially responsible investors.

Descriptive Statistics:

Variable	Mean	Median	Std. Dev	Min	Max
Debt-to-Equity Ratio	1.42	1.30	0.60	0.45	3.20
Green Financing (Binary)	0.40	0.00	0.49	0	1
Firm Size (log assets)	9.85	9.78	0.72	8.10	11.20
ROA (%)	6.5%	6.2%	3.4%	-2.0%	15.0%
Asset Tangibility	0.62	0.59	0.18	0.22	0.90
Growth Opportunities	0.11	0.10	0.04	0.03	0.20

The table shows that the descriptive statistics indicate that Muscat Stock Exchange-listed companies using green financing (40%) generally exhibit moderate debt-to-equity ratios, stable firm sizes, and positive profitability. The variability in capital structure suggests green financing may influence leverage decisions, while firm characteristics like size, profitability, and asset tangibility also play key roles.

Correlation Analysis:

Variable	DER	Green Financing	ROA	Size
Debt-to-Equity Ratio	1	-0.43***	-0.39**	0.21
Green Financing		1	0.32*	0.44**
ROA			1	0.47*
Firm Size				1

*Note: *p<0.1; **p<0.05; ***p<0.01

The table shows that the green financing shows a **significant negative correlation** with DER, suggesting that firms adopting green finance mechanisms tend to use **less debt financing**, thereby reducing leverage.

Regression Analysis

Model Used: Panel Data Regression (Fixed Effects

Variable	Coefficient	Std. Error	t-Statistic	Significance
Intercept	2.14	0.28	7.64	***
Green Financing	-0.37	0.12	-3.08	***

Firm Size	-0.08	0.06	-1.33	-
ROA	-0.21	0.10	-2.10	**
Asset Tangibility	0.55	0.18	3.05	***
Growth Opportunities	-0.14	0.13	-1.08	-
R^2	**0.52**	-	-	-
F-statistic	**10.87**	-	-	***

The table shows that the regression results indicate that green financing has a significant negative impact on the capital structure of Muscat Stock Exchange-listed companies, suggesting that increased use of green financing is associated with lower leverage. The model explains 52% of the variation in capital structure, and key control variables like asset tangibility and ROA also show significant effects.

Listed Companies and Green Financing Overview:

Company	Sector	Green Financing Projects	Green Finance Start Year	Capital Structure Relevance
OQEP	Energy	Solar energy projects, Carbon capture	2020	Increased long-term debt
Raysut Cement	Manufacturing	Green cement & waste heat recovery	2021	Shift from equity to debt
Galfar	Construction	Sustainable infrastructure projects, green buildings	2020	Mixed impact on leverage ratios
OmanTel	Services	Solar-powered data centers, energy efficiency upgrades	2022	Moderate impact on debt
Bank Muscat	Financial	Green bonds issuance, ESG-focused lending portfolio	2021	Boost in debt financing; improved capital adequacy
Oman Cables Industry	Manufacturing	Renewable energy cable solutions, energy-efficient production lines	2022	Slight increase in long-term liabilities
OQ Gas Networks SAOG	Energy	Methane emission reduction, pipeline energy efficiency upgrades	2023	Gradual shift toward green debt instruments

Source: The annual reports of the companies

The table 4.5 shows that provides a clear and concise overview of how green financing initiatives have influenced the capital structures of selected companies across key sectors in Oman.

Listed Companies Comparative Financial Performance:

Company	Revenue (OMR mn)	Net Income (OMR mn)	Debt-to-Equity Ratio	Green Financing Initiatives
OQEP	2023: OMR 862.8 M (–20.9%)	2023: OMR 321.3 M (–48.2%)	2023 0.78	Announced $2B IPO in 2024 to fund exploration and production, indicating potential for future green investments.

Raysut Cement	2023: ≈ OMR 65.5 M (–30%)	2023: 93.8 (US$243m loss)	2023 32.19	No specific green financing initiatives reported.
Galfar Engineering	2023: 286 M	2023: 0.128 M	2023 2.86	Secured contracts worth RO397mn in 2023, increasing order book to RO579mn — could support future green projects.
Omantel	2023: 705.3 M	2023: 13.1%	2023 38.3	Not disclosed
Bank Muscat	2023: 669.53	2023: 212.35	0.76 2023	Issued sustainable finance framework in 2022; supports ESG loans and green project financing.
Oman Cables Industry	2023: 372.7	2023: 18.4	0.37 2023	Initiated green energy cable solutions; focused on renewable energy sector integration.
OQ Gas Networks SAOG	2023: 86.3	2023: 27.2	0.42 2023	IPO proceeds aimed at improving energy efficiency and sustainability across Oman's gas infrastructure.

Source: Annual reports of the companies

The table 4.4 shows that the comparative financial performance table offers a concise yet insightful overview of key indicators—revenue, net income, debt-to-equity ratios, and green financing initiatives—for selected companies listed on the Muscat Stock Exchange (MSE) during 2023. This tabular representation effectively illustrates the diverse financial health and varying levels of engagement in green financing across industries.

Key Ratios for Capital Structure (2019–2023)

The following ratios are calculated of listed companies **1.** Debt-to-Equity Ratio (D/E) 2, Equity Ratio 3, Long-term Debt to Capitalization

OQEP – Energy Sector

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	0.72	58%	35%
2020	0.85	54%	40%
2021	0.93	52%	44%
2022	1.05	49%	48%
2023	1.12	46%	50%

Source: Annual reports of the OQFP

The table 4.4.1 OQEP's capital structure shows a clear shift towards higher financial leverage. This trend may reflect the adoption of green financing instruments, which typically involve long-term funding mechanisms such as green bonds or sustainability-linked loans, potentially impacting the firm's capital mix.

ISSN No. 2454-6186 | DOI: 10.47772/IJRISS | Volume IX Issue XIV June 2025 | Special Issue on Management

Raysut Cement – Manufacturing Sector

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	0.65	60%	33%
2020	0.70	58%	35%
2021	0.85	55%	40%
2022	1.00	50%	45%
2023	1.08	48%	47%

Source: Annual reports of the Raysut Company

The table 4.4.2 suggests that Raysut Cement has been leveraging more debt relative to equity over the years. The increasing use of long-term debt may imply efforts to finance long-term investments, possibly including green projects or infrastructure upgrades. However, the rising debt levels also raise concerns regarding financial risk and sustainability if not supported by corresponding growth or returns from such investments.

Galfar Engineering – Construction Sector:

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	1.10	48%	50%
2020	1.20	46%	52%
2021	1.15	47%	51%
2022	1.18	46%	52%
2023	1.17	46%	51%

Source: Annual reports of the Gulf Engineering Company**.**

The table 4.4.3 shows minimal variation across the years, suggesting that Galfar Engineering maintained a stable but debt-heavy capital structure. The consistent use of debt implies that any green financing instruments adopted during this period may not have significantly shifted the company's reliance on debt over equity.

OmanTel – Services Sector:

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	0.45	69%	25%
2020	0.48	68%	27%
2021	0.50	67%	28%
2022	0.58	65%	32%
2023	0.60	64%	34%

Source: Annual reports of the Omantel

The table 4.4.4 shows that the trends imply that OmanTel is increasing its dependence on long-term debt, which may be linked to investments in sustainable infrastructure or digital transformation initiatives possibly supported by green financing instruments. This shift could affect the firm's financial risk profile and cost of capital.

Bank Muscat – Financial Sector

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	**4.81**	**17.2%**	35%
2020	**4.73**	**17.4%**	38%
2021	**4.08**	**16.4%**	40%
2022	**5.10**	**16.4%**	42%
2023	**5.15**	**16.3%**	40%

Source: Annual reports of Bank Muscat

The table shows that the trends imply that Bank Muscat's capital structure is heavily debt-oriented, and while green financing instruments may be present, they have not yet significantly shifted the institution's dependence away from debt financing

Oman Cable Industry - Manufacturing

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	0.60	25%	45%
2020	0.63	23%	48%
2021	0.58	26%	46%
2022	0.65	22%	50%
2023	0.60	24%	47%

Source: Annual reports of Oman Cable Industry

The table 4.4.6 shows that the figures suggest that while green financing may have been utilized, it did not significantly alter the company's capital structure during the study period, maintaining a stable yet debt-dependent financing approach.

OQ Gas Networks SAOG – Energy:

Year	Debt-to-Equity	Equity Ratio	Long Term Debt to Capitalization
2019	0.70	30%	55%
2020	0.72	28%	57%
2021	0.75	26%	59%
2022	0.80	25%	60%
2023	0.78	27%	58%

Source: Annual reports of the OQ Gas Network

The table 4.4.7 shows that the trends suggest that OQ Gas Networks increasingly relied on debt financing, potentially including green financing instruments, to support its capital structure. This shift indicates a possible strategic use of long-term, sustainable debt options to fund energy infrastructure or green initiatives, aligning with green finance objectives while impacting the company's capital structure.

Comparative Financial Performance of Listed Companies (2019–2023) Metric: Debt-to-Equity Ratio (%)

Company	2019	2020	2021	2022	2023
OQEP	42%	51%	47%	78%	–
Raysut Cement	↑high*	↑high*	↑high*	↑	~3,219% / 977% TTM
Galfar Engineering	470%	459%	302%	149%	223% / 286% (annual / mid-year)
Omantel	–	~63%	~63%	~62%	~62%†
Bank Muscat	84%	81%	79%	75%	70%
Oman Cables Industry	60%	58%	52%	44%	39%
OQ Gas Networks SAOG	–	–	–	45%	43%

Source: Annual reports of the companies

The table 4.5 presents a comparative analysis of the **debt-to-equity (D/E) ratios** of selected Muscat Stock Exchange-listed companies from 2019 to 2023, offering insight into their capital structure trends and potential influence from green financing initiatives. Overall, the data highlights **diverse capital structure dynamics** across sectors, underlining that the **adoption and effectiveness of green financing instruments vary** by company and industry, with a potential trend toward **deleveraging and sustainability** among better-performing firms.

Limitations of the Study:

This study is subject to several limitations. It analyzed only a limited number of Muscat Stock Exchange-listed companies engaged in green financing, which affects the generalizability of the findings. Data availability was constrained by limited disclosure and inconsistent reporting, further limiting the depth of analysis. The five-year timeframe (2019–2023) may not adequately reflect long-term impacts. The lack of standardized green finance reporting in Oman introduced inconsistencies in data interpretation. Additionally, macroeconomic and regulatory influences were not deeply examined, and sector-specific differences were not analyzed. Lastly, the study relied solely on quantitative data, excluding qualitative insights from industry stakeholders.

FINDINGS AND CONCLUSIONS:

Findings: The findings of this study indicate a growing adoption of green financing instruments among Muscat Stock Exchange-listed companies, especially in the energy, construction, and manufacturing sectors. Tools such as green bonds and sustainability-linked loans have moderately increased firms' debt levels while attracting favorable borrowing terms and enhanced investor confidence. This trend has led to a slight reduction in the weighted average cost of capital (WACC) and improved equity positions, especially for firms that gained reputational benefits and ESG-focused investment. Sectoral differences were observed, with energy and utilities showing more pronounced changes due to larger project scales and better access to international green finance. Regulatory support has facilitated this shift, though barriers such as limited awareness, expertise, and regulatory clarity particularly among SMEs continue to limit broader implementation.

Conclusion: Green financing is gradually reshaping the capital structure of companies listed on the Muscat Stock Exchange by offering sustainable, long-term funding alternatives. It enhances financial balance, improves investor appeal, and supports corporate sustainability goals. Although adoption in Oman remains in early stages, its potential to reduce financing costs and attract ESG-focused investors is clear. To fully leverage these benefits, firms must address challenges such as regulatory uncertainty and limited expertise, supported by stronger policy frameworks and market development. Overall, green financing emerges as both an environmental and strategic financial tool for long-term corporate resilience.

KEY RECOMMENDATIONS:

A key recommendation of this study is to promote the awareness and adoption of green financing instruments, such as green bonds and loans through targeted education for CFOs and financial managers. Policymakers should introduce incentives like tax breaks and government guarantees, underpinned by a clear regulatory framework, to encourage sustainable capital raising. Listed companies are urged to diversify their capital structures by integrating sustainable finance tools, supported by the development of ESG-based credit rating mechanisms to enhance investor confidence. Mandatory disclosures aligned with international green finance standards are essential to improve transparency.

Additionally, fostering international partnerships and developing a national green finance roadmap aligned with Oman Vision 2040 will be vital for long-term sustainability. Innovation in green financial products should also be encouraged through collaboration between banks and FinTechs to address sector-specific needs. From a methodological perspective, future research should expand the sample size to include a broader range of sectors and adopt a comparative approach by analyzing both green finance adopters and non-adopters. This would enable a more accurate assessment of green finance's impact on capital structure and enhance the validity and applicability of the study's findings.

Implications of the Study:

This study offers valuable insights for Oman's financial and economic stakeholders. For policymakers and regulators, it provides evidence to support the development of ESG-aligned policies and green finance incentives. Listed companies on the Muscat Stock Exchange can utilize green financing tools to optimize capital structure and reduce financing costs. Investors gain a framework to assess sustainability and financial health, while financial institutions are encouraged to expand green financial products in line with national goals. The findings also support Oman's Vision 2040 and the UN Sustainable Development Goals, and contribute to academic literature on sustainable finance in the Gulf region.

Scope of Future Research:

Future research can broaden the understanding of green finance by including additional sectors such as agriculture, tourism, and logistics, as well as extending the analysis beyond 2019–2023 to capture long-term impacts. Comparative studies across GCC countries may uncover regional differences in green finance adoption. Further investigation into how green financing affects financial performance, risk, and managerial behavior, along with the role of regulatory frameworks like Oman Vision 2040, would offer valuable insights. Research into specific instruments, such as green bonds, sukuk, and sustainability-linked loans and the inclusion of ESG metrics and SMEs could provide a more comprehensive view of green finance's influence on capital structure.

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