



ADVANCED INTERNATIONAL JOURNAL
OF BUSINESS, ENTREPRENEURSHIP
AND SMES
(AIJBES)

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ESG AND CAPITAL STRUCTURE: A HYBRID SYSTEMATIC LITERATURE REVIEW AND BIBLIOMETRIC ANALYSIS

Elliv Hidayatul Lailiyah^{1*}, Ahmad Ridhuwan Abdullah², Noormariana Mohd Din³

¹Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Malaysia

 a23e2727f@siswa.umk.edu.my

 <https://orcid.org/0000-0003-1525-8648>

²Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Malaysia

 ridhuwan.a@umk.edu.my

 <https://orcid.org/0000-0002-9220-5833>

³Faculty of Entrepreneurship and Business, Universiti Malaysia Kelantan, Malaysia

 mariana.md@umk.edu.my

 <https://orcid.org/0000-0001-9938-2245>

*Corresponding Author

Article Info:

Article history:

Received date: 26.01.2026

Revised date: 12.02.2026

Accepted date: 16.03.2026

Published date: 31.03.2026

To cite this document:

Lailiyah, E. H., Abdullah, A. R., & Mohd Din, N. (2026). ESG And Capital Structure: A Hybrid Systematic Literature Review and Bibliometric Analysis. *Advanced International Journal of Business Entrepreneurship and SMEs*, 8 (27), 382-401.

Abstract:

In recent years, numerous studies have examined the role of ESG in financing decisions. However, comprehensive and systematic studies that map research developments, thematic focus, theoretical and practical implications regarding the relationship between ESG and capital structure are still relatively limited. Existing literature still shows inconsistent empirical findings regarding the influence of ESG on corporate leverage decisions. Furthermore, there are few studies that systematically map the intellectual structure, publication trends, and future research directions in the ESG and capital structure literature through systematic literature reviews and bibliometric analysis. This study aims to conduct a Systematic Literature Review (SLR) and bibliometric analysis of empirical studies discussing ESG and capital structure. This study uses the SLR method by searching for keywords related to ESG and capital structure of articles indexed in the Scopus database. The final sample consists of publications of 2012–2025 and are evaluated at the end of 2025. Data are analyzed using a bibliometric approach with VOSviewer to identify publication trends, author collaborations, and thematic research clusters. The analysis results indicate that research on ESG and capital structure has experienced significant growth in recent years, with a primary focus on the effect of ESG on leverage, the cost of capital, and access to financing. Previous studies have been dominated by developed countries, while research in emerging economies is increasing but remains limited. This research contributes by mapping research clusters, publication trends, and inter-topic relationships in the ESG and capital structure literature through bibliometric analysis. Furthermore, it identifies inconsistencies in

empirical findings and existing theoretical gaps, and proposes a future research agenda to develop a more integrated study of ESG and capital structure.

DOI:10.35631/AJBES.827025 **Keyword:**

Bibliometric Analysis; Capital Structure; ESG; Systematic Literature Review.



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Introduction

In the past decade, Environmental, Social, and Governance (ESG) factors has developed from simply a component of social responsibility to a significant determinant of corporate financial decisions. ESG covering environmental, social, and governance aspects that play a strategic role in assessing a company's long-term sustainability and attract regulators, investors and other stakeholders who are more concerned about responsible business practices. Attention to ESG has also led to significant changes in how companies formulate their financing strategies and capital structure decisions, including the proportion of debt and equity financing on the balance sheet (Tawfiq et al., 2024).

Capital structure, which is the composition of debt and equity used by a company to finance operations and expansion, is a critical element of financial management because it influences corporate risk, the weighted average cost of capital (WACC), and the company's market value. Several recent empirical studies have shown that ESG performance and ESG disclosure can influence a company's capital structure choices. For example, evidence from Tawfiq et al. (2024) research on Fortune 500 companies show that strong ESG disclosure is related with lower leverage ratios and lower costs of capital, particularly in large companies, suggesting that sustainability can improve financing conditions and risk perceptions among investors and creditors. Furthermore, research from Zhao & Zhang (2024) in China found a significant relationship between ESG scores and financing decisions, with better ESG performance associated with greater equity financing and lower debt, while demonstrating a negative effect between ESG scores and the debt-to-equity ratio, reflecting a more balanced financial strategy. Although the relationship between ESG and corporate capital structure has received increasing research in recent years, the existing literature still exhibits several important limitations. Most previous research has focused on empirically examining the direct relationship between ESG performance and corporate leverage decisions across various country and industry contexts.

However, the results obtained have yielded mixed and inconsistent findings. Some studies find that high ESG performance is related with lower leverage levels because companies considered less risky and have greater access to equity financing. Conversely, other research suggests that strong ESG practices actually increase a company's access to debt financing because creditors perceive the company as more transparent and have better risk management.

Furthermore, most of the studies that examined the relationship between ESG, and corporate finance are narrative in nature and generally place ESG within a broader context such as financial performance, firm risk, or firm value. Therefore, they have not specifically mapped the development of research focusing on the relationship between ESG and capital structure. Consequently, there remains limited understanding of how research in this field has developed, including the distribution of publications, author and country contributions, and key research themes that shape the intellectual structure of the ESG and capital structure literature.

In addition, systematic research has been relatively and comprehensively limited to date mapped the literature by combining a systematic literature review and bibliometric analysis approach to identify research trends, relationships between topics, and future research directions in ESG and capital structure studies. Therefore, to fill this gap, this study aims to conduct a systematic literature analysis based on Scopus-indexed publications and bibliometric mapping using VOSviewer to understand the relevance, distribution of research, and the theoretical and practical implications of the relationship between ESG and capital structure. In particular, there is a lack of hybrid studies that integrate systematic literature reviews and bibliometric analysis using comprehensive databases such as Scopus. This gap limits a holistic understanding of research trends, dominant themes, and provide future research directions in this area.

Various bibliometric studies have shown a significant surge in the number of ESG publications, particularly since 2020, driven by increasing regulatory pressure, investor demand, and global awareness of sustainability issues (Ahuja & Rani, 2025; Mukhtar et al., 2025; Seow, 2025). This rapid expansion confirms that ESG has become a central issue in finance and corporate governance studies. However, this rapid growth in literature also presents new challenges, that is the disparity of research findings across various disciplines with diverse approaches and focuses. Without a systematic synthesis effort, an understanding of the position and direction of ESG research developments, particularly its relationship to capital structure, becomes less integrated. Therefore, the need for studies that can comprehensively summarize and map the development of ESG literature is increasingly urgent.

Therefore, this article aims to conduct a Systematic Literature Review (SLR) and a hybrid bibliometric analysis to comprehensive mapping the state of research on ESG, and capital structure based on publications indexed in Scopus. This approach not only identifies dominant authors, journals, and research themes but also traces the evolution of research topics and methods used in ESG studies (Cai et al., 2024; Mukhtar et al., 2025; Nguyen, 2025).

Furthermore, numerous studies have shown that ESG has significant financial implications, including for firm value, financial risk, and financing decisions. ESG is no longer looked at solely as an ethical or reputational issue, but rather as a strategic factor that has the potential to influence a firm's capital structure (Patekar & Mahajan, 2025; Wang et al., 2024). This approach not only addresses the academic need to consolidate the literature but also provides a clear conceptual framework for future research and provides insights to practitioners and

policymakers into how ESG contributes to corporate capital structure decisions in a global and cross-industry context. Thus, this research makes an important contribution to bridging the gap between sustainability studies and corporate finance, as well as providing a conceptual foundation for managerial decision-making and public policy.

Accordingly, this study addresses the following research questions:

- RQ1 : Does the relationship between ESG and capital structure remain a relevant and significant topic for future academic research?*
- RQ2 : What is the current distribution and focus of research studies examining ESG and capital structure?*
- RQ3 : What theoretical and practical implications can be derived from the existing literature to inform future research on ESG and capital structure?*

Literature Review

The discussion that will be discussed in the literature review, there are five points as follows:

Concept and Development of ESG

ESG is a multidimensional framework used to assess how a company incorporates environmental, social and governance aspects into its business activities. The environmental dimension encompasses emissions management, energy efficiency, and natural resource protection; the social dimension relates to employment practices, stakeholder relations, and social responsibility; while the governance dimension emphasizes board structure, transparency, and corporate oversight mechanisms (Gillan et al., 2021). In the evolving financial literature, ESG is no longer viewed simply as part of corporate social responsibility (CSR), but as an indicator of non-financial risk and a company's long-term sustainability (Friede et al., 2015).

With increasing regulation of sustainability reporting and global investor attention, particularly since 2020, ESG has increasingly become a primary focus in academic research and business practice. Investors and creditors use ESG information to assess a company's risk, performance, and long-term prospects, making ESG a strategic factor in corporate financial decision-making (Broadstock et al., 2021; Wang et al., 2024). This situation supports the argument that the relationship between ESG and capital structure remains significant for future research, in line with the focus of RQ1.

Capital Structure in Corporate Finance Perspective

Capital structure is the combination of debt, equity, and other financial instruments that a company uses to finance its assets (Vaid et al., 2025). Classical capital structure theories, such as trade-off theory, pecking order theory, and agency theory, explain financing decisions based on a balance between tax benefits, bankruptcy costs, information asymmetry, and agency conflicts (Frank & Goyal, 2009; Myers, 1984). However, these theories initially emphasized internal and external financial factors, with limited attention to sustainability aspects.

In recent literature, ESG is seen as a factor that expands the framework of traditional capital structure theory. Good ESG practices are associated with stronger governance, greater transparency, and more effective risk management, thus influencing investor and creditor

perceptions of corporate risk (Cheng et al., 2014). Thus, ESG becomes an important element in explaining variations in capital structure decisions that cannot be fully explained by conventional financial variables. ESG refers to the non-financial metrics that reflect a firm's commitment to sustainability, influencing its strategic planning, risk management, and capital allocation decisions (Msomi, 2025).

Distribution and Focus of ESG and Capital Structure Research

The ESG and capital structure literature exhibits a broad and multidisciplinary distribution of research. Research spans finance, accounting, management, and sustainability, with focuses ranging from the cost of capital and corporate risk to financial performance and firm value. Most studies are empirical and utilize public company data, with research predominantly focused on developed countries and large economies such as the United States, China, and European countries (Albuquerque et al., 2019; Broadstock et al., 2021).

Furthermore, recent bibliometric studies reveal that ESG publications are increasing rapidly, but developing within relatively separate thematic clusters, such as ESG and financial performance, ESG and risk, and ESG and corporate finance (Ahuja & Rani, 2025; Mukhtar et al., 2025). This situation suggests that despite the high research volume, research focus and direction remain fragmented. Therefore, a systematic mapping of the distribution of authors, journals, countries, and understanding the intellectual structure of this field make theme of this research is very important as is the focus of RQ2.

Theoretical Perspectives on the Relationship between ESG and Capital Structure

The relationship between ESG and capital structure can be explained through several theoretical approaches. Stakeholder theory states that companies that consider stakeholder interests will gain greater legitimacy and support from the market, thereby improving access to funding sources (Freeman, 2010). Signaling theory explains that ESG disclosure serves as a signal of corporate transparency and quality, which can lower the information asymmetry between management and investors (Cheng et al., 2014; Spence, 1974). Furthermore, Agency theory explains the role of corporate governance in mitigating agency conflicts, which ultimately influence decisions about the function of debt and equity (Fama & Jensen, 1983). The integration of these various theoretical perspectives suggests that ESG influences capital structure not only directly through the cost of capital and risk, but also indirectly through mechanisms of trust, legitimacy, and corporate governance quality.

Empirical Evidence of the Relationship between ESG and Capital Structure

Mixed results regarding the relationship between ESG and capital structure have been shown by empirical findings. Several studies have found that due to increased access to equity financing and reduced business risk, companies with high ESG performance tend to have lower leverage levels (Albuquerque et al., 2019; Broadstock et al., 2021). Conversely, other studies have shown that more ESG practices facilitate access to debt financing at lower costs, thus enabling more optimal use of leverage (Goss & Roberts, 2011; Oikonomou et al., 2014). Practically, these findings demonstrate that ESG is not simply an ethical issue, but also a strategic factor in formulating corporate funding policies. This synthesis of theoretical and practical implications forms the primary foundation of RQ3.

Research Methode

This research employs a systematic literature review with a quantitative bibliometric approach. This approach allows the study to distinguish key research trends, patterns, and entities within a discipline. The PRISMA framework provides a clear and transparent overview of the topic under study, ensuring a comprehensive and replicable literature. Several inclusion criteria were selected: (1) articles published up to December 14, 2025, (2) publications in English, and (3) focus on ESG and capital structure. The bibliometric analysis using VOSviewer, which manages the Scopus database, enabling visual exploration of the depth of the literature. The resulting network map demonstrates how researchers are interconnected, which scientific works form the theoretical foundation of the field, and which topics are developing and interconnected in discussions on ESG and capital structure.

The combination of two analysis provides researchers with a comprehensive approach to synthesizing empirical findings and mapping the overall research landscape. Bibliometric allows for the identification of publication patterns, the most influential authors and institutions, relationships between articles through co-citation and bibliographic coupling, and the evolution of research themes (Zupic & Čater, 2015). Furthermore, systematic reviews strengthen this process by providing critical appraisal and thematic synthesis based on methodological standards such as PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Moher et al., 2009).

By integrating these two approaches, researchers are able not only to identify the knowledge structure of the ESG and capital structure fields but also to assess research gaps, emerging topic developments, and key contributors shaping future research directions. This hybrid approach is increasingly recognized as effective in building a deep understanding of the complexities of modern academic literature.

The initial phase of this study was conducted using a top-down methodology, progressing from a broad search trajectory to narrower studies and topics. Articles were identified using a Boolean search strategy combining keywords related to "ESG" and "capital structure," then selected using the PRISMA protocol based on predetermined inclusion and exclusion criteria. The publication time range was not limited to capture historical to current developments. The publications include journal articles and conference papers and exporting data in CSV and RIS formats for further analysis, resulting in a final 145 articles for analysis. Next, bibliometric mapping using VOSviewer software to identify research trends, relationships between keywords, and the direction of ESG and capital structure literature development.

According to Figure 1, a search result retrieved on December 14, 2025, from the Scopus database using article titles, abstracts, and the keyword "ESG and Capital Structure" from the earliest publication in 2018 to the most recent in 2025 yielded a total of 19,577 articles on ESG. Then, searching for the specific keywords "ESG and capital structure" yielded 196 documents. Following this finding, a screening process filtered the documents according to their classification.

Articles were eliminated based on document type: book chapter (15), conference paper (11), book (7), review (6), erratum (1), and conference review (1), resulting in a total of 155 documents. This study also excluded languages other than English: Chinese (4), Portuguese

(2), Korean (2), German (1), and Arabic (1). This resulted in 145 documents after screening. These documents were further analyzed in this study to answer three research questions.

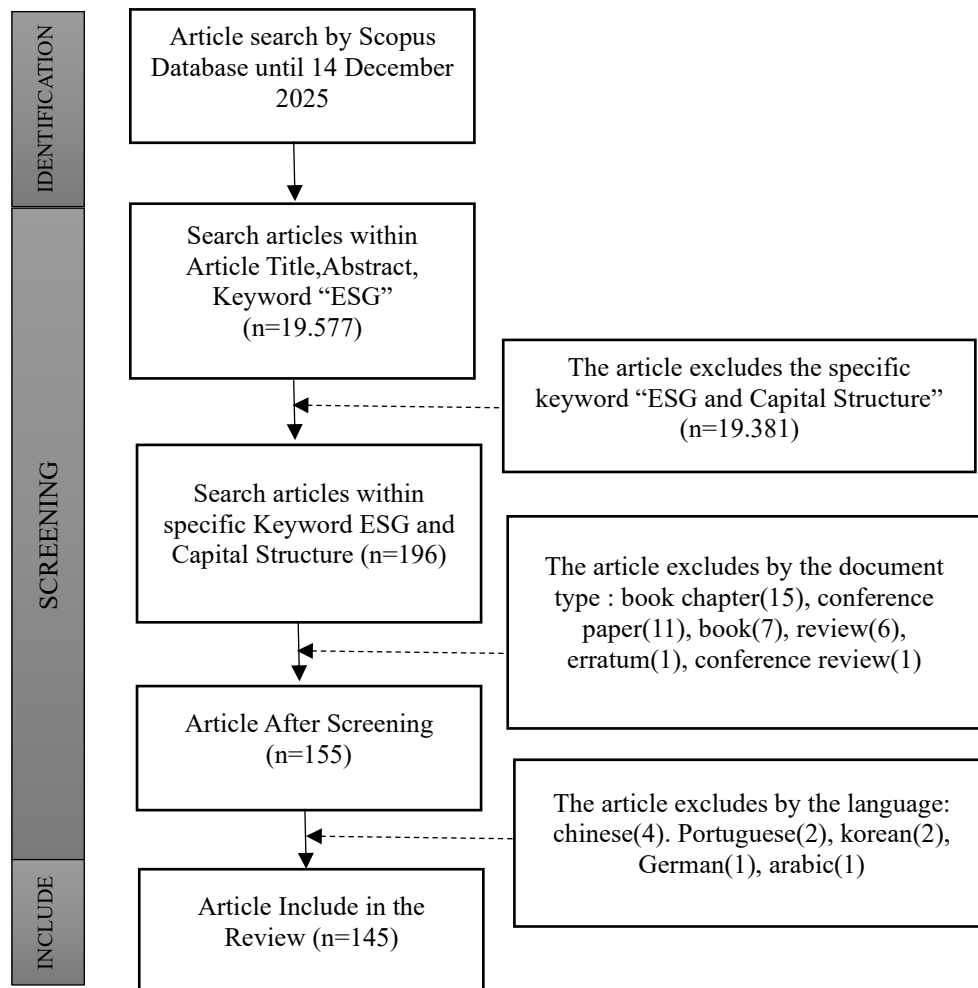


Figure 1: Systematic Literature Review Using PRISMA

Source: Processed Data, 2025

Result And Discussion

145 articles in the Scopus database on ESG and Capital Structure will be analyzed. This data is sourced from the identification of published articles. The most influential elements in ESG and capital structure, such as year, author, affiliation, and country of involvement, will be analyzed in this study.

Relevance of the ESG-Capital Structure Relationship for Future Academic Research

Based to data taken from the Scopus database, it has been confirmed that since 2012 scientific papers on ESG and capital structure have continued to grow and to date there are 145 articles; this indicates that investigations on ESG and capital structure show a positive trend, as illustrated in Figure 2. The first study on ESG and capital structure was conducted by (Hes, 2012) entitled "Proposal for establishing an environmental, social, and governance (ESG) groundwork: Creating a closed system within the microfinance sector". Their research directly

links ESG frameworks to capital structures in the microfinance sector through the proposal of a regulated "closed system". This system suggests internal funding by sector actors using their own currency, ensuring that company operations are aligned with social objectives and strong governance, thus linking ESG compliance to funding viability and capital structure.

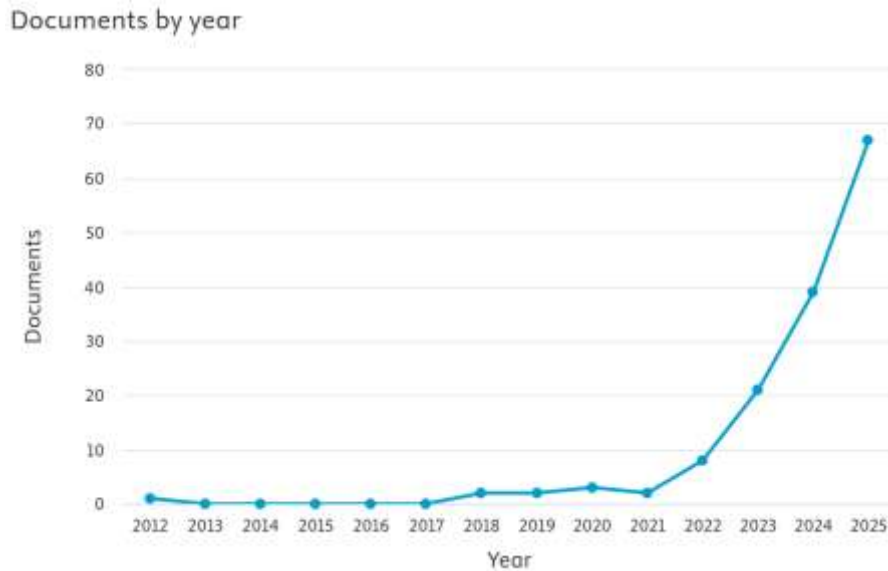


Figure 2: Document Trends by Year

Source: Scopus Database, 2025

Based on publication data from Scopus, the relationship between Environmental, Social, and Governance (ESG) and capital structure has proven to be an increasingly relevant and significant research topic in the academic literature. An analysis of document trends by year shows that prior to 2017, the number of publications examining ESG and capital structure was very limited and sporadic. This indicates that in the early period, ESG topics were not yet a primary focus in corporate finance studies, particularly regarding capital structure decisions. Significant changes began to emerge from 2018–2020, when the number of publications began to gradually increase. This increase reflects the integration of ESG issues into mainstream financial discourse, along with the development of sustainability regulations, increasing investor awareness, and the strengthening role of ESG in corporate risk management. Despite minor fluctuations in 2021, the overall trend continues to show growth.

A particularly sharp surge in publications occurred between 2022 and 2025. The number of documents increased exponentially, with a peak in publications recorded in the final years. This trend confirms that the relationship between ESG and capital structure is not merely temporary but is actually accelerating in response to global dynamics such as the shift towards a sustainable economy, the emergence of green financing instruments, and demands for ESG transparency from capital markets. Overall, the annual pattern of documents from Scopus indicates that research on ESG and capital structure is still in a strong growth phase and has not yet reached saturation. Therefore, this topic remains highly significant for future research, both from a theoretical and practical perspective, particularly in explaining how sustainability factors influence corporate financing decisions across various institutional and industry contexts.

Research Distribution and Focus in ESG–Capital Structure Studies

The distribution of research on ESG and capital structure across 145 articles is categorized based on several classifications, including country or territory, affiliation, source, and author, with the top 10 articles for each classification. This distribution of previous research will be beneficial for academics and practitioners in explaining future research agendas, particularly on ESG and capital structure.

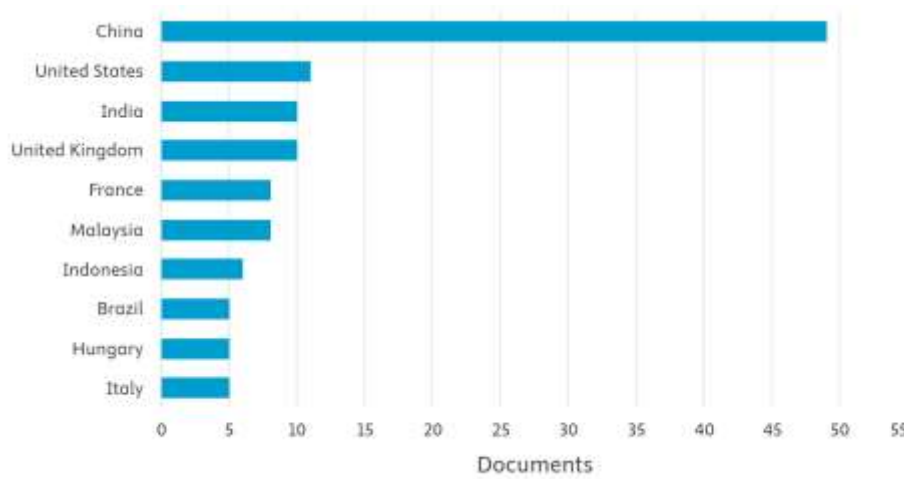


Figure 3: Geographic Distribution

Source: Scopus Database, 2025

Based on Figure 3, China emerged as the largest contributor to ESG and capital structure research. There were 49 studies published between 2012 and 2025. This country was followed by the United States (11 studies), India (10 studies), the United Kingdom (also 10 studies), France (8 studies), Malaysia (8 studies), Indonesia (6 studies), and Brazil, Hungary, and Italy (5 studies each), which traditionally have strong research ecosystems and capital markets. China's dominance reflects the growing academic attention to ESG in large emerging markets with rapid regulatory dynamics and economic transformation. Furthermore, contributions from developing countries such as Malaysia and Indonesia are also beginning to emerge, although the number of publications remains relatively limited. This pattern suggests significant opportunities for further research, particularly to explore the relationship between ESG and capital structure within the institutional and capital market contexts of emerging economies.

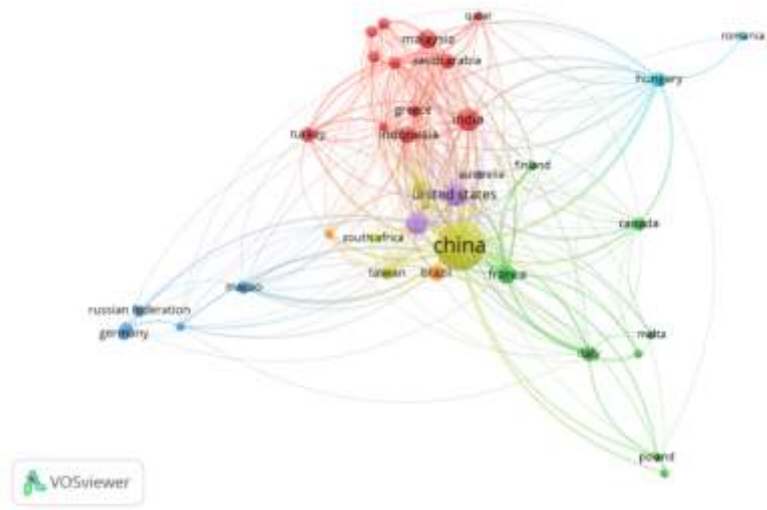


Figure 4: Network Country Visualization

Source: Scopus Database, 2025

A country network visualization using VOSviewer (Figure 4) shows patterns of international collaboration in ESG, and capital structure research based on co-authorship relationships. Node size represents a country's publication productivity, while connections between nodes reflect the intensity of research collaboration. The visualization results indicate that high-productivity countries, such as China and the United States, act as network hubs with stronger connectivity. Furthermore, several regional clusters have emerged, reflecting collaboration tendencies based on geographic proximity and shared institutional contexts. Conversely, developing countries exhibit relatively limited connectivity, indicating a persistent global collaboration gap. Overall, this visualization confirms that ESG and capital structure research is global in nature but remains country-centric, thus offering potential for cross-country collaboration to enrich and expand the literature in this area.

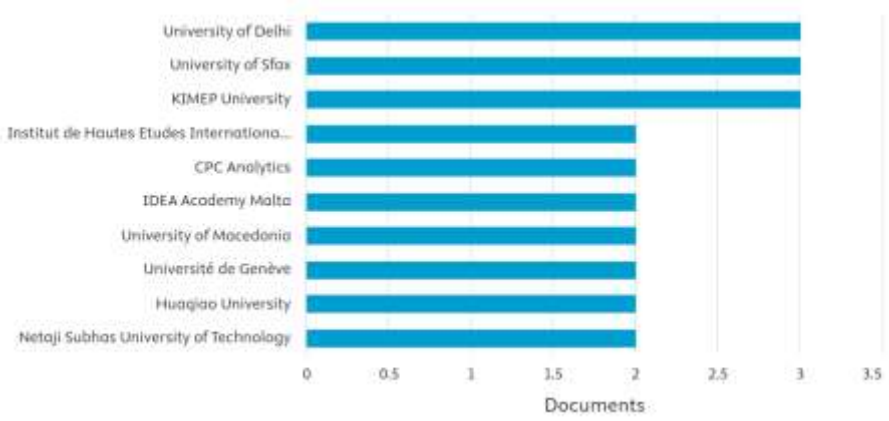


Figure 5: Affiliation Distribution

Source: Scopus Database, 2025

Based on affiliation as shown in Figure 5. Three studies each from the University of Delhi, the University of Sfax, and KIMEP University. The other seven top affiliates each produced two studies. From an institutional perspective, the distribution of affiliations shows that research contributions come from a variety of universities and international research institutions, with

no single institution dominating the publications. This emphasizes the global and collaborative nature research of ESG and capital structure.

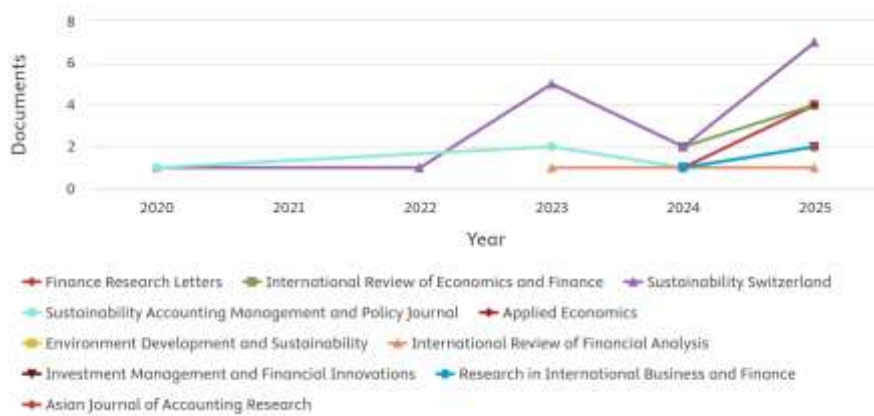


Figure 6: Publication Source Distribution

Source: Scopus Database, 2025

In terms of publication sources (Figure 6), ESG and capital structure research is spread across various reputable international journals. The journals most frequently publishing on this topic include Sustainability (Switzerland) with 16 articles, the International Review of Economics and Finance with 6 articles, Finance Research Letters with 5 articles, Applied Economics and Sustainability Accounting Management and Policy Journal with 4 articles each, and Environment, Development and Sustainability, the International Review of Financial Analysis, Investment Management and Financial Innovation, Research in International Business and Finance with 3 articles each, and the Asian Journal of Accounting Research with 2 articles.

The dominance of these journals indicates that ESG and capital structure studies are not only of interest to traditional finance journals, but also to interdisciplinary journals emphasizing sustainability, policy, and governance issues. This indicates the strengthening position of ESG as a key topic in the sustainable finance literature.

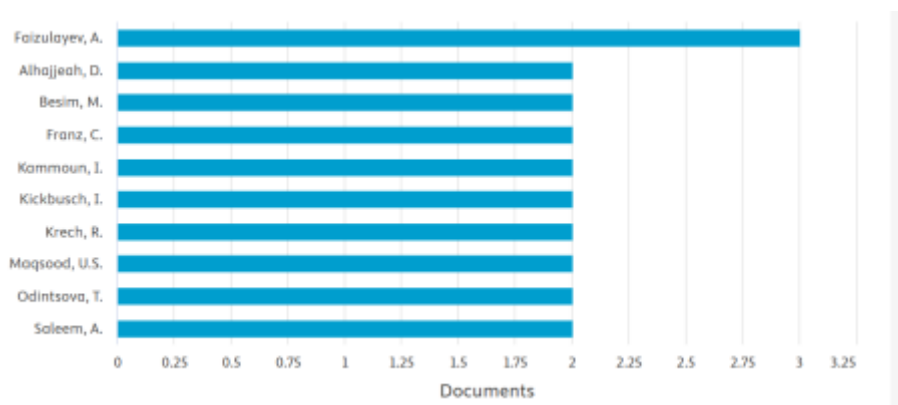


Figure 7: Number of Publications by Author (Top 10)

Source: Scopus Database, 2025

Figure 7 is the distribution of research by authorship is based on the top 10 authors, with Faizulayev A. having three articles. The others each have two articles (Alhajjeah, Besim, Franz, Kommoun, Kickbusg, Krech, Massood, Odinsova, Salem). The distribution of publications by authorship shows that there is no dominance by one or two primary researchers. Top authors

generally produce only two to three publications. This pattern indicates that ESG and capital structure research is still in its infancy and has not yet been concentrated in a specific group of researchers. This reflects the fragmented yet dynamic nature of the literature, with contributions from various academics from different disciplinary backgrounds and geographic regions. Thus, this field remains wide open for new theoretical development and empirical contributions.

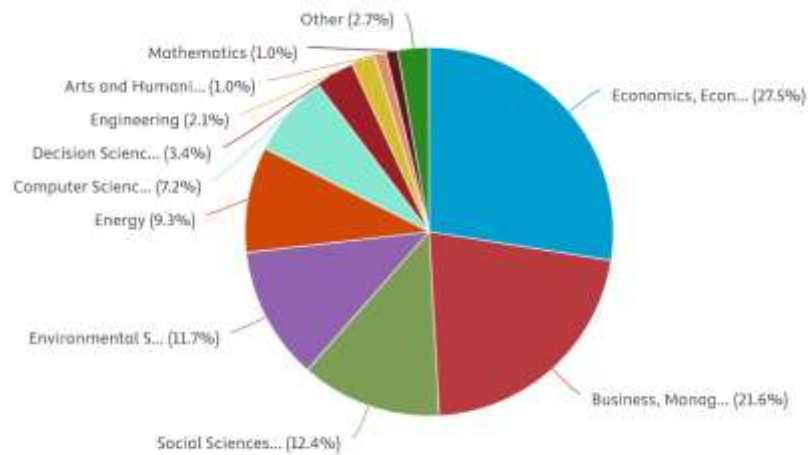


Figure 8: Percentage of Publications by Subject Area

Source: Scopus Database, 2025

Based on Figure 8, the Scopus classification of disciplines, research on ESG and capital structure is multidisciplinary, but dominated by economics and business. The majority of publications are in the fields of Economics, Econometrics, and Finance (27.5%) and Business, Management, and Accounting (21.6%). This indicates that ESG and capital structure studies remain firmly rooted in corporate finance and financing decision-making. Furthermore, significant contributions also come from the Social Sciences (12.4%) and Environmental Sciences (11.7%), reflecting the integration of sustainability, social responsibility, and environmental impact issues into capital structure analysis. Other fields, such as energy, computer science, decision sciences, and engineering, account for smaller contributions but demonstrate a broadening of methodological and analytical approaches in ESG and capital structure studies.

Theoretical and Practical Implications for Future ESG and Capital Structure Research

Based on literature analysis from Scopus indexed publication and supported by keyword co-occurrence results using VOSviewer (Figure 9), research on ESG and capital structure yields several important theoretical and practical implications for future research. The pattern of keyword linkages indicates that sustainability issues and financing decisions are no longer isolated but have become integrated into the mainstream discourse of corporate finance. This is reflected in the high total link strength of core keywords such as *ESG*, *capital structure*, and *ESG performance*, as shown in Table 1.

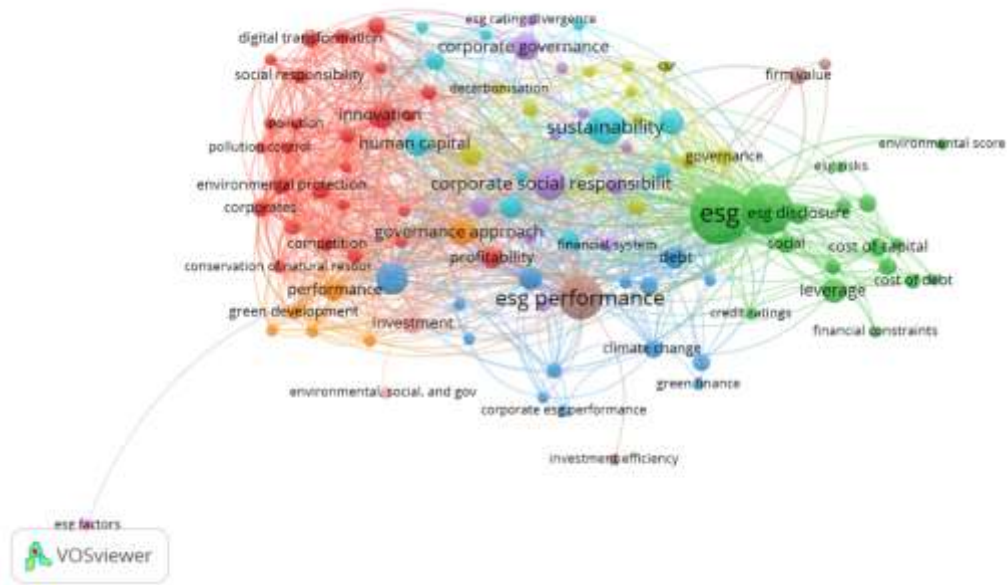


Figure 9: Co-Occurrence Result by Keyword

Source: VOSviewer Output, 2025

Theoretically, the dominance of keywords such as *governance approach*, *sustainable development*, and *sustainability* indicates the need to expand the traditional capital structure theoretical framework. Classical theories such as trade-off theory and pecking order theory, which focus on tax considerations, bankruptcy costs, and information asymmetry, are increasingly inadequate to explain modern corporate financing decisions independently, this is what this study finds. Instead, recent literature positions ESG as a complementary element that enriches capital structure theory through the perspectives of stakeholder theory, legitimacy theory, and signaling theory. Within this framework, ESG performance functions as a strategic mechanism that influences risk perception, market legitimacy, and investor and creditor preferences regarding corporate funding sources.

Table 1. Keyword by Authors

Rank	Keyword	Total Link Strength
1	ESG	139
2	Capital Structure	125
3	ESG Performance	107
4	Governance Approach	102
5	Sustainable Development	102
6	Sustainability	76
7	Corporate Social Responsibility	73
8	Environmental Policy	71
9	Environmental Protection	68
10	Performance assessment	56

Source: VOSviewer Output, 2025

Furthermore, the strong link between keywords like *corporate social responsibility*, *environmental policy*, and *environmental protection* confirms that the social and environmental dimensions of ESG play an important role in forming the capital structure. This implies that future research should adopt a multidimensional approach to ESG and examine the role of each dimension separately and in an integrated manner in influencing leverage and the cost of capital.

From a practical perspective, these bibliometric results indicates that the quality of ESG performance and corporate governance increasingly influences capital structure decisions. The strong association with the keyword *performance assessment* underscores the growing need for a more reliable and standardized ESG measurement system as a basis for financing decisions. For managers, this means that financing strategies are no longer solely oriented toward optimizing short-term costs of capital but must also consider sustainability reputation and long-term risk perception. For investors and creditors, ESG is becoming an increasingly relevant risk assessment tool in determining financing preferences.

Table 2. Summary of Empirical Evidence on the Influence of ESG on Capital Structure

No	Key Finding	Reference
1	Firms with higher ESG performance are perceived as less risky and more transparent, enabling access to debt financing under more favorable conditions and reducing the likelihood of zero-leverage strategies.	Morais et al., (2025)
2	Strong ESG practices improve future financial performance, lower the cost of capital, and enhance investor confidence, thereby shaping firms' capital structure decisions	Vaid et al., (2025)
3	High ESG performance strengthens corporate reputation, increases equity financing access, and is associated with lower debt-to-equity ratios.	Msomi (2025)
4	In the banking sector, ESG compliance enhances financial stability and risk management, reinforcing long-term capital structure resilience.	Faizulayev, (2025)
5	ESG activities serve as a signaling mechanism that reduces financial constraints, especially during economic downturns, leading to higher leverage capacity.	Tekin & Polat, (2025)
6	Firms with strong ESG disclosure tend to rely less on debt and more on equity financing, with social and environmental dimensions lowering leverage and governance improving capital structure optimization.	Zahid et al., (2023)
7	Effective capital structure management complements ESG initiatives by lowering financing costs and increasing firm value.	Naibaho et al., (2025)

Source: Processed Data, 2025

These implications are reinforced by the empirical evidence summarized in Table 2, which shows that the influence of ESG on capital structure is contextual and not always linear. Some studies find that strong ESG performance reduces leverage due to increased access to equity

funding and reduced business risk. Conversely, other studies show that strong ESG practices actually increase leverage capacity by reducing the cost of debt and financial constraints. These differing findings confirm that the relationship between ESG and capital structure is influenced by industry context, financial sector, economic conditions, and the quality of corporate governance.

Overall, the integration of bibliometric findings and empirical evidence suggests that ESG and capital structure research has evolved toward a more comprehensive and strategic approach. However, significant research opportunities remain, particularly in examining causal mechanisms, the role of moderating and mediating variables, and the relatively underrepresented context of developing countries. Thus, RQ3 is answered by stating that the existing literature provides not only theoretical implications in the form of an expanded capital structure theoretical framework, but also relevant practical implications for managers, investors, and policymakers, while also opening up more contextual and in-depth research directions.

Integrative Conceptual Framework

A conceptual framework is a map of thought that explains how and why variables are interconnected, based on a synthesis of theory and empirical evidence, not the results of a single statistical data set. In SLR and bibliometrics, the framework does not originate from a single study, but from the summarization of many studies. Based on the SLR and bibliometric results, research gaps were identified, namely: (1) Inconsistent research results. Some studies found that ESG decreased leverage, while others found that high ESG increased leverage. (2) Research was fragmented, including ESG and performance, ESG and risk, and ESG and capital structure. (3) ESG was often directly applied to leverage without explaining its mechanisms.

The integrative conceptual framework is the contribution of this study to the literature (Figure 10) that reconceptualizes ESG as a strategic and multidimensional factor that indirectly influences corporate capital structure decisions. ESG does not directly affect leverage or debt-equity composition but rather influences capital structure through risk perception (higher ESG means lower risk), market legitimacy (higher ESG is a signal of quality), and governance quality (higher ESG leads to stronger internal controls and more optimal leverage decisions) under various contextual conditions. These mechanisms then shape investor and creditor preferences regarding corporate funding sources, whether debt or equity. However, the strength and direction of ESG's influence on capital structure are contextual and influenced by moderating factors such as industry type, economic conditions, regulatory environment, and country characteristics. Thus, this framework explains why the ESG and capital structure literature shows mixed results, while integrating the perspectives of traditional capital structure theory with stakeholder, legitimacy, and signaling theories. Simply put, this framework explains not "whether ESG matters" but "how, through what mechanisms, and when or under what conditions ESG affects capital structure."

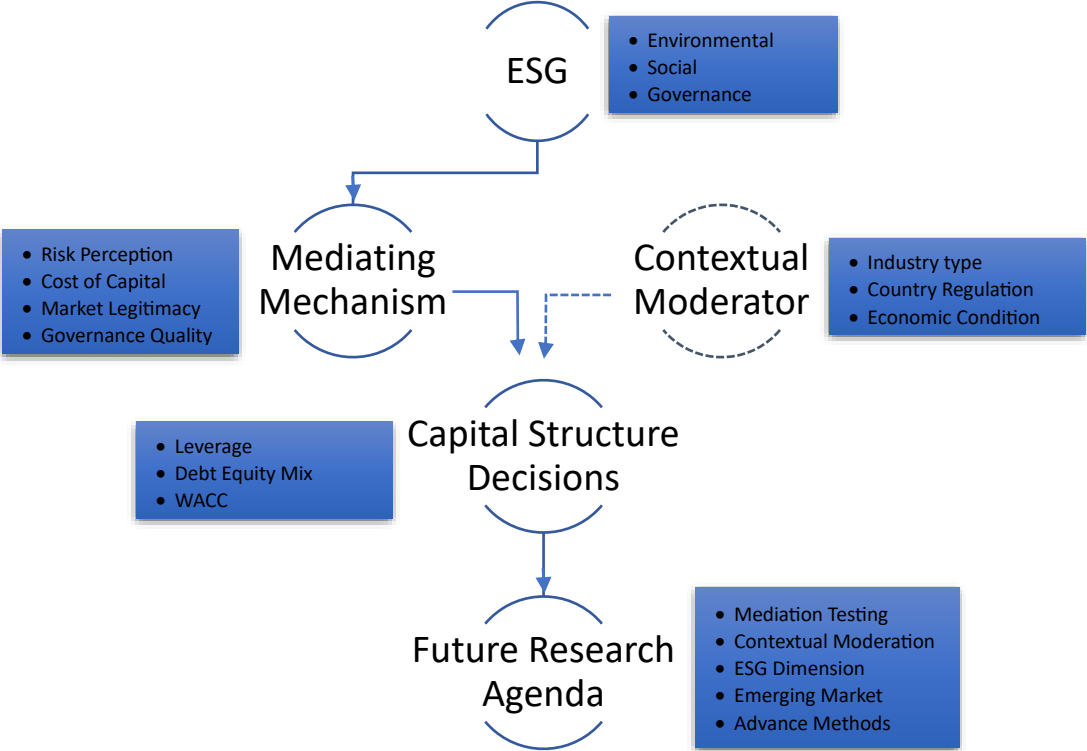


Figure 10: Integrative Conceptual Framework

Source: Processed Data, 2025

Conclusions And Recommendations

This study purposes to conduct a Systematic Literature Review (SLR) and bibliometric analysis of Scopus indexed studies addressing the relationship between Environmental, Social, and Governance (ESG) and capital structure. By combining the PRISMA approach and bibliometric mapping using VOSviewer, this study successfully synthesized the literature, mapped research focuses and identified relevant theoretical and practical implications for future research development.

In response to RQ1, the relationship between ESG and capital structure remains relevant and significant as an academic research topic is the result of this study. Bibliometric findings demonstrate a consistent increase in the number of publications, particularly since 2020, reflecting the growing attention of academics, investors, and regulators to the integration of sustainability into corporate financial decisions. ESG is no longer just positioned as an ethical or reputational issue but has evolved into a strategic factor influencing corporate financing and risk management decisions.

Regarding RQ2, this study found that the literature on ESG and capital structure is widely distributed and multidisciplinary, spanning the fields of finance, accounting, management, and sustainability. However, research is still dominated by empirical studies based on public companies in developed countries and large economies, such as the United States, China, and European countries. The mapping results also show that research develops within relatively

separate thematic clusters, such as ESG and financial performance, ESG and risk, and ESG and financing decisions, indicating a fragmentation of research focus.

To answer RQ3, the literature synthesis and keyword co-occurrence results indicate that ESG has significant theoretical and practical implications in the context of capital structure. Theoretically, ESG expands the traditional capital structure theoretical framework by integrating the perspectives of stakeholder theory, legitimacy theory, and signaling theory. Practically, empirical evidence suggests that ESG performance and disclosure influence capital structure through mechanisms such as risk perception, market legitimacy, governance quality, and access to funding sources. However, the influence of ESG on leverage and the cost of capital is contextual and influenced by industry sector, economic conditions, and the regulatory environment.

The analysis shows that research on ESG and capital structure has increased significantly in recent years but is still dominated by empirical studies in developed countries, focusing primarily on leverage and the cost of capital. Bibliometric mapping identifies several key thematic clusters, such as ESG and financial performance, ESG and risk, and ESG and financing decisions, indicating that the literature is developing in a multidisciplinary manner but remains fragmented. In terms of methodology, most studies use quantitative approaches based on panel data with estimation techniques such as fixed effects and GMM. Furthermore, the existing literature still shows conceptual gaps, as most studies focus on testing the direct relationship between ESG and capital structure without explaining the underlying mechanisms or contextual factors.

several important contributions in this study are given to the ESG and capital structure literature. First, it systematically maps the development of ESG and capital structure research using bibliometric analysis, thus identifying key research clusters, publication trends, and interrelationships across topics in the existing literature. Second, it reveals research fragmentation and inconsistencies in empirical findings regarding the influence of ESG on corporate capital structure. Third, it identifies a theoretical gap in the literature, which is still dominated by empirical approaches without a comprehensive conceptual framework. Fourth, it proposes a future research agenda that highlights the importance of examining mediating mechanisms, contextual factors, and a multidimensional approach to ESG in explaining corporate capital structure decisions.

As a key contribution, this study proposes an integrative conceptual framework that positions ESG as a multidimensional strategic factor that influences capital structure through mediating mechanisms and contextual factors (moderating). This framework provides a new body of knowledge that bridges the sustainability and corporate finance literature in a more systematic and comprehensive manner.

This study offers several important recommendations for future researchers, practitioners, and policymakers. *First*, Further research is recommended to conduct empirical testing the mediating mechanisms that explain the relationship between ESG and capital structure, such as risk perception, cost of capital, market legitimacy, and corporate governance quality. This approach is expected to clarify causal processes that have so far been underexplored in the literature. *Second*, future research should incorporate contextual factors as moderating variables, including industry type, economic conditions, regulatory environment, and country characteristics. This is crucial for explaining the differences in empirical results found in

previous studies and increasing the relevance of findings across contexts. *Third*, it is recommended that future research adopt a multidimensional approach to ESG by separately analyzing the environmental, social, and governance dimensions and examining the interactions between these dimensions. This approach can provide a more comprehensive understanding of the role of each ESG component in influencing capital structure decisions. *Fourth*, future research is expected to expand the scope of studies to developing countries and underexplored industrial sectors, in order to increase the generalizability of the findings and enrich the ESG and capital structure literature from different institutional perspectives. *Fifth*, from a methodological perspective, future research is recommended to use more advanced empirical approaches, such as system GMM, or machine learning based methods, as well as longitudinal designs to capture the dynamics of ESG's influence on capital structure over the long term. Overall, these suggestions are expected to guide the development of more integrated, contextualized ESG and capital structure research, oriented toward strengthening both theoretical and practical contributions in the future.

Acknowledgements: The author would like to sincerely thank to the Supervisor and Co-Supervisor for their kind guidance, patience, and valuable insights throughout the research process. Their support and encouragement were greatly appreciated. The author also extends sincere appreciation to Universiti Malaysia Kelantan for providing full access to the Scopus database, which played an important role in completing this study, and for organizing NPC 2026 as a meaningful platform for academic exchange and knowledge sharing

Funding Statement: No Funding

Conflict of Interest Statement: The authors declare that there is no conflict of interest regarding the publication of this paper. All authors have contributed to this work and approved the final version of the manuscript for submission to the Advanced International Journal of Business, Entrepreneurship and SMEs (AIJBES).

Ethics Statement: This study did not involve any human participants, animals, or sensitive data requiring ethical approval. The authors confirm that the research was conducted in accordance with accepted academic integrity and ethical publishing standards.

Author Contribution Statement: All authors contributed significantly to the development of this manuscript. [Author 1] was responsible for the conceptualization, methodology, and overall supervision of the study. [Author 2] handled data collection, analysis, and interpretation of results. [Author 3] contributed to the literature review, drafting, and critical revision of the manuscript. All authors read and approved the final version of the manuscript prior to submission.

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