

INFORMATION TRANSPARENCY IN THE DEVELOPMENT OF THE GREEN BOND MARKET IN LISTED FIRMS IN VIETNAM

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ABSTRACT

This study investigates information transparency in the development of the green bond market among listed firms in Vietnam within the context of digital transformation, artificial intelligence, and increasing global financial integration. Using primary survey data collected from 305 financial professionals and accountants, the study applies reliability analysis and exploratory factor analysis (EFA) to assess the measurement of transparency. The results indicate that information transparency remains at a moderate level, with mean values ranging from 2.984 to 3.482. The measurement scale demonstrates acceptable reliability (Cronbach's Alpha = 0.763) and construct validity (KMO = 0.754; explained variance = 58.504%). The findings highlight that compliance with international disclosure standards and consistency in financial and environmental reporting are critical components of transparency. From a theoretical perspective, the study supports signaling and agency theories in explaining the role of transparency in reducing information asymmetry. Practically, the results suggest that firms should adopt digital technologies and AI-based reporting systems to enhance disclosure quality, while policymakers should strengthen ESG-related regulatory frameworks. The study contributes to the literature on sustainable finance by providing firm-level evidence from an emerging market context.

Keywords: Finance, accounting, environmental, social and governance (ESG), green bond market, information transparency (ITR).

1. INTRODUCTION

The rapid expansion of sustainable finance has positioned green bonds as a key instrument for mobilizing capital toward environmentally responsible investments. In emerging markets such as Vietnam, the development of the green bond market is increasingly associated with broader economic transitions, including digital transformation, international integration, and the growing importance of environmental, social, and governance (ESG) standards. However, despite policy efforts and increasing investor interest, the Vietnamese green bond market remains underdeveloped, largely due to concerns regarding information asymmetry and lack of transparency.

From a theoretical perspective, information transparency plays a critical role in reducing uncertainty and enhancing market efficiency. According to signaling theory [1], firms can reduce information asymmetry by disclosing credible and relevant information to investors, thereby improving their access to capital. In the context of green bonds, transparency is particularly important because investors must assess not only financial returns but also environmental performance. Inadequate disclosure may lead to “greenwashing” risks, undermining investor confidence and market credibility.

In addition, agency theory [2] highlights that conflicts of interest between managers and investors can be mitigated through transparent reporting and monitoring mechanisms. For green bonds, transparency ensures that proceeds are allocated to environmentally beneficial projects, thus aligning managerial actions with investor expectations. Moreover, stakeholder theory [3] emphasizes that firms are accountable to a broader set of stakeholders, including regulators, investors, and society, which further reinforces the need for transparent disclosure practices.

From a practical standpoint, Vietnam’s stock market has witnessed significant growth, with listed firms increasingly engaging in ESG-related activities. However, the regulatory framework for green bond disclosure is still evolving, and many firms face challenges in meeting international transparency standards. The integration of digital technologies and artificial intelligence (AI) in financial reporting and data analytics presents new opportunities to enhance transparency, improve data accuracy, and facilitate real-time disclosure. These developments are particularly relevant in the context of global capital flows, where international investors demand higher levels of accountability and standardized reporting.

Given these considerations, this study aims to examine the role of information transparency in the development of the green bond market among listed firms in Vietnam. By focusing on firm-level disclosure practices, the study contributes to the literature on sustainable finance and provides practical insights for improving market efficiency and investor confidence.

2. THEORETICAL BACKGROUND

2.1. Signaling Theory

Signaling theory posits that firms disclose information to signal their quality and reduce information asymmetry between managers and investors [1]. In capital markets, transparency serves as a signal of credibility, financial strength, and governance quality.

In the context of green bonds, firms that provide transparent and verifiable information about environmental impact and fund allocation can differentiate themselves from less credible issuers. This reduces investor uncertainty and enhances the attractiveness of green financial instruments.

2.2. Agency Theory

Agency theory explains conflicts of interest between managers (agents) and shareholders (principals) [2]. Information transparency is a key mechanism to reduce agency costs by improving monitoring and accountability.

Applied to green bonds, transparency ensures that funds are used for intended environmental purposes, reducing the risk of misallocation and increasing investor trust.

2.3. Stakeholder Theory

Stakeholder theory emphasizes that firms are accountable to multiple stakeholders beyond shareholders [3]. Transparency in environmental and financial reporting is essential to maintain legitimacy and stakeholder trust.

In green bond markets, transparent disclosure enables firms to meet the expectations of regulators, investors, and society regarding sustainable development goals.

2.4. Literature review

Recent studies identify information transparency as a fundamental condition for the effective functioning of green bond markets, primarily due to its role in mitigating information asymmetry and enhancing investor confidence. In one of the early empirical contributions in this area, [4] examine EU sovereign green bonds and demonstrate that greater transparency regarding the use of proceeds is associated with lower bond yields, suggesting that more transparent issuers can obtain financing under more favorable conditions.

This study makes an important contribution by operationalizing the concept of “green bond transparency” into measurable indicators and directly linking it to market pricing outcomes. However, its focus on EU sovereign bonds limits the generalizability of the findings, particularly in relation to firm-level issuance within emerging capital markets.

A second stream of research examines the quality of environmental information disclosure as a more specific dimension of transparency. [5] provide empirical evidence that higher-quality environmental disclosure reduces the financing costs of green bonds in China, with more pronounced effects observed among non-financial firms and issuers with stronger reputational standing.

This study contributes to the literature by demonstrating that disclosure quality not only holds theoretical relevance but also translates into measurable financial outcomes. However, the dependent variable in this study is financing cost rather than transparency itself, and the findings are derived from the Chinese market, where green finance is more institutionally developed than in Vietnam. As such, the applicability of these results to emerging markets with less mature regulatory frameworks remains limited.

At the issuer level, [6] report that greater environmental information transparency is positively associated with higher credit ratings for green bonds. Based on a sample of 217 green bonds issued between 2019 and 2021, the authors argue that enhanced environmental disclosure improves the market’s capacity to assess both the “green” attributes and the overall credibility of issuers.

This study makes a valuable contribution by examining transparency as a direct determinant of market-based outcomes, in contrast to many prior studies that treat it more indirectly. However, the analysis primarily focuses on the consequences of transparency, while paying limited attention to the underlying firm-level drivers—such as organizational, technological, and governance factors—that shape transparency in the first place.

Another related stream of research highlights the broader informational role of green bond issuance in capital markets. [7] [8] demonstrate that green bond issuance enhances stock price informativeness, with this effect operating partly through improved information transparency and stronger sustainability performance.

This study contributes to the literature by linking transparency to capital market efficiency and by showing that disclosure may generate spillover effects beyond the bond market. However, in this context, information transparency is treated primarily as an underlying mechanism rather than as the focal dependent construct. This leaves scope for further research that directly measures and explains information transparency at the firm level, particularly among listed companies.

More recent research by Alman [9] examines the credibility-enhancing role of external reviews in the corporate green bond market and shows that third-party verification and reputable reviewers can reduce funding costs under specific legal and institutional conditions.

These findings indicate that transparency extends beyond internal disclosure to include external assurance mechanisms, which are increasingly important for mitigating greenwashing concerns. A key strength of this study lies in its large sample of 1,242 corporate green bonds and its focus on credibility-enhancing processes. However, the analysis primarily centers on the pricing effects of external assurance rather than on the determinants of firm-level transparency practices, particularly within emerging market contexts.

Taken together, the recent literature provides strong evidence that transparency in green bond markets matters for yields, credit ratings, stock-price informativeness, and credibility. However, three important gaps remain. First, most studies treat transparency as an explanatory variable, mediating mechanism, or market outcome, rather than as a dependent construct that must itself be explained. Second, the dominant evidence comes from China and Europe, while firm-level evidence from Vietnam's listed companies remains very limited. Third, recent studies rarely integrate the new context of digital transformation and AI-enabled reporting, even though digital tools increasingly shape disclosure quality, timeliness, and traceability in capital markets.

To address these gaps, the present study positions information transparency as the dependent variable for listed firms in Vietnam's stock market using primary survey data (see table 1). Specifically, the study moves away from asking whether transparency affects pricing or ratings and instead asks what drives firms to disclose green bond-related information transparently.

Table 1. Disclosure regarding the use of green bond proceeds

Code	Description	Source
ITR1	The firm discloses clear information about green bond use of proceeds.	[10] [11]
ITR2	Environmental impact reporting is transparent and verifiable.	
ITR3	Financial and non-financial information is consistently disclosed.	
ITR4	Disclosure meets international standards.	

Source: Author's synthesis

3. METHODOLOGY

3.1. Qualitative research methodology

This study employed a qualitative approach based on in-depth interviews with key informants. Specifically, five lecturers with extensive expertise in finance and accounting from National Economics University and Hanoi University of Industry were interviewed. These institutions are among the leading universities in Vietnam for education and research in finance and accounting.

In addition, five experts currently serving as chief financial officers (CFOs) in listed firms in Vietnam were included to provide practical insights from the corporate sector. The interviews focused on issues related to information transparency in the development of the green bond market among listed firms in Vietnam. The qualitative findings were used to refine the research model and support the interpretation of quantitative results.

3.2. Quantitative research methodology

This study employed a quantitative approach using a structured questionnaire comprising four constructs measured on a five-point Likert scale, ranging from 1 (“strongly disagree”) to 5 (“strongly agree”). Data were collected through a survey targeting finance professionals and accountants working in listed firms in Hanoi.

A total of 400 questionnaires were distributed, of which 320 responses were returned over a two-month period. After excluding incomplete and invalid responses, 305 valid questionnaires were retained for data analysis. The final sample size satisfies the minimum requirement suggested by Hair [11], which recommends that the sample size should be at least five times the number of observed variables.

Following data collection, the responses were screened, coded, and entered into SPSS software for statistical analysis.

Descriptive statistics, reliability analysis using Cronbach’s alpha, exploratory factor analysis (EFA).

4. RESULTS

4.1. Descriptive statistics

Information on descriptive statistics results is presented in Table 2 as follows:

Table 2. Descriptive statistics explaining the information transparency in the development of the green bond market

Code	N	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
						Statistic	Std. Error	Statistic	Std. Error
ITR1	305	1.0	5.0	3.295	0.7640	-0.155	0.140	0.059	0.278
ITR2	305	1.0	5.0	3.338	0.8156	-0.510	0.140	0.455	0.278
ITR3	305	1.0	5.0	2.984	0.7925	-0.011	0.140	0.735	0.278
ITR4	305	1.0	5.0	3.482	0.8888	-0.539	0.140	0.004	0.278
Valid N (listwise)	305						0.140	0.059	0.278

Source: Author's synthesis and from SPSS software

The descriptive statistics indicate that the mean values of information transparency (ITR) variables range from 2.984 to 3.482, suggesting a moderate level of transparency among listed firms in Vietnam. While firms demonstrate a certain degree of disclosure regarding green bond-related information, the relatively modest mean scores—particularly for financial and non-financial consistency (ITR3)—highlight persistent gaps in disclosure practices. From a financial market perspective, this reflects ongoing information asymmetry and limited standardization, which may constrain investor confidence and hinder the development of Vietnam’s green bond market in the context of increasing global capital integration.

4.2. Cronbach's Alpha analysis results

The analysis of the information transparency in the development of the green bond market was performed using the Cronbach's alpha reliability coefficient (see table 3).

Table 3. Results of reliability analysis of scales through Cronbach's alpha coefficient

Cronbach's Alpha	N of Items			
0.763	4			
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
ITR1	9.803	4.086	0.506	0.735
ITR2	9.761	3.939	0.503	0.738
ITR3	10.115	3.845	0.566	0.705
ITR4	9.616	3.264	0.679	0.637

Source: Author's synthesis and from SPSS software.

The Cronbach's Alpha coefficient of 0.763 confirms that the measurement scale for information transparency is reliable and internally consistent [12] [13][14]. All observed variables exhibit corrected item-total correlations above 0.5, indicating that each item contributes meaningfully to the construct. This result validates the appropriateness of the transparency scale adapted from prior literature and supports its use in further empirical analysis.

4.3. Results of exploratory factor analysis (EFA)

The component and variance analysis was used to perform exploratory factor analysis (EFA) in table 4, 5 and table 6.

Table 4. Results of exploratory factor analysis (EFA) (KMO and Bartlett's Test)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.754
Bartlett's Test of Sphericity	Approx. Chi-Square	301.144
	Df	6
	Sig.	0.000

Source: Author's synthesis and from SPSS software.

Table 5. Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.340	58.504	58.504	2.340	58.504	58.504
2	0.671	16.768	75.272			
3	0.593	14.823	90.095			
4	0.396	9.905	100.000			

Source: Author's synthesis and from SPSS software.

Table 6. Component Matrix^a

ITR	Component
	1
ITR4	0.851
ITR3	0.770
ITR1	0.718
ITR2	0.713

Source: Author's synthesis and from SPSS software.

The EFA results demonstrate strong construct validity. The KMO value of 0.754 and a statistically significant Bartlett's test (Sig. = 0.000) confirm the suitability of factor analysis. The extracted variance of 58.504% exceeds the acceptable threshold, indicating that the model explains a substantial portion of variance in information transparency [12] [13][14].

Moreover, all factor loadings exceed 0.7, with ITR4 (international standards disclosure) showing the highest loading (0.851). This suggests that compliance with international reporting standards is a critical dimension of transparency in the green bond market. The unidimensional structure of the construct implies that transparency is perceived as a holistic concept, encompassing financial, environmental, and regulatory disclosure aspects.

5. DISCUSSION AND IMPLICATIONS

The findings indicate that information transparency in Vietnam's green bond market remains at a moderate level, reflecting structural limitations in disclosure practices despite increasing regulatory attention. This result aligns with prior studies [5] [6], which emphasize that transparency is essential for reducing financing costs and improving market credibility. However, in emerging markets such as Vietnam, the institutional framework for ESG disclosure is still evolving, leading to inconsistencies in reporting practices.

From a theoretical perspective, the results support signaling theory, suggesting that firms with higher transparency can enhance their credibility in capital markets. At the same time, the findings are consistent with agency theory, as improved disclosure reduces information asymmetry and monitoring costs. In the context of digital transformation, transparency is increasingly shaped by firms' ability to leverage digital reporting systems and AI-based analytics to improve data accuracy and timeliness.

From a managerial standpoint, firms should prioritize the adoption of international reporting standards, such as the Green Bond Principles (ICMA) and ESG disclosure frameworks, to enhance credibility among global investors. Standardized reporting not only improves transparency but also facilitates cross-border capital flows, which are crucial in the era of financial globalization.

Furthermore, firms should invest in digital transformation and AI-enabled reporting systems to improve the efficiency and reliability of disclosure processes. Digital platforms can support real-time reporting, automated data validation, and enhanced traceability of green bond proceeds, thereby reducing the risk of greenwashing.

Finally, policymakers should strengthen the regulatory framework by introducing clear disclosure guidelines and enforcement mechanisms. This includes developing unified ESG reporting standards and encouraging third-party verification to enhance transparency and accountability in the green bond market.

6. CONCLUSIONS

This study highlights the importance of information transparency in the development of the green bond market among listed firms in Vietnam. The empirical findings indicate that transparency is currently at a moderate level, with significant variation across different disclosure dimensions. The results contribute to the literature by providing firm-level evidence from an emerging market and by emphasizing the role of transparency as a key factor in sustainable finance development.

However, the study has several limitations. First, the research focuses on a single construct—information transparency—without examining its determinants or consequences through a multivariate model. Second, the sample is limited to firms in Hanoi, which may restrict generalizability. Future research should expand the scope by incorporating additional variables such as corporate governance, digital transformation, and ESG performance, and apply advanced methodologies such as SEM or panel data analysis to enhance robustness.

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