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Exploring the relationship between ESG Practices and Financial Performance of Vietnamese Companies

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ABSTRACT. This study investigates the relationship between ESG practices and financial performance among the top 100 companies in Vietnam, as listed in the VN100 Index during 2017-2023. The authors use the Pooled OLS, Fixed Effects Model, and Random Effects Model approaches. The analysis reveals no statistically significant relationship between ESG and financial performance. The findings underscore the influence of traditional financial factors such as firm age, firm size, financial leverage, and economic growth rate, highlighting their importance in financial assessments. This paper adds to the increasing body of research on ESG performance in emerging markets by arguing that to promote deeper ESG integration, there is a need for increased regulatory support as well as investor education. The increasing influence of global sustainability norms necessitates an understanding of these dynamics within emerging markets such as Vietnam to align corporate strategies with investor expectations and international standards. Additional research is suggested to track how ESG factors affect financial performance as market conditions and investor perceptions shift.

1. Introduction

Environmental, social, and governance (ESG) criteria integration has become a major global trend in business operations and investment decisions [1]. Several factors have contributed to the evolution of ESG in recent years, including increased corporate transparency regarding ESG impacts and heightened awareness of environmental issues and climate change [2]. Investors are now paying more attention as a result of this transparency. The reason for this change is a

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wider understanding that using sustainable business practices is necessary to make long-term financial gains and have a positive impact on the environment and society [3]. ESG considerations are especially important in developing nations like Vietnam, where rapid economic expansion has created serious environmental and social problems [4]. With the global emphasis on sustainability growing, businesses are being examined for more than just their financial performance; they are also being observed for how they interact with society, how they affect the environment, and how well they manage their internal affairs.

ESG factors are widely used as a standard of evaluation when assessing potential business investments [5]. It is no longer unusual for FDI inflows to choose companies that satisfy ESG standards in addition to having the ability to demonstrate traditional financial management capabilities [6]. This indicates how the business community as a whole is becoming more and more socially responsible. As investors increasingly use these non-financial factors to identify material risks and growth opportunities, the rise in ESG investing globally represents a structural shift in asset management [7]. However, little is known about the dynamics and ramifications of ESG investing in Vietnam's distinct economic environment. The Vietnamese government has imposed stricter rules and standards encouraging sustainable practices in response to increased regulatory attention to environmental concerns, social disparities, and governance issues [8]. International and domestic investors are pushing for improved ESG disclosures and increased transparency, which calls for a deeper comprehension of how ESG integration affects financial performance.

There is increasing evidence in the literature that strong ESG policies can reduce financial risk and improve financial performance [9], [8], [10], [11]. Customers and employees nowadays are more socially and environmentally conscious than ever, given the challenges posed by COVID-19, war, climate change, and the slowdown in the economy [12]. Strong ESG policies help businesses draw in more qualified employees, increase consumer loyalty, and meet the expectations of a wider range of stakeholders [13]. There is an immediate need for localized research because the stakeholder landscape is changing and changing business strategies and priorities, especially in emerging economies like Vietnam.

According to the 2022 ESG readiness report, only 44% of Vietnamese businesses have created plans or committed to adopting ESG practices. However, concerns regarding the precise impact of ESG compliance on a company's value, whether the effect is positive, negative, or negligible have arisen as a result of the issue's increasing attention in Vietnam. ESG practices have a favorable effect on banks' profitability, according to earlier Vietnamese research [8]. It's not confirmed yet for the study's subject, which is businesses, especially public companies. Studies

conducted in various other nations have demonstrated that ESG significantly and favorably affects the financial performance of public firms [14]. More study is necessary for Vietnam, though, because every nation has a different business culture and internal enterprise characteristics. This is the research gap. Examining the ESG concept's theoretical foundations and examining any potential influence mechanisms found in earlier studies are essential steps toward clarifying this. Such an investigation would benefit greatly from the Vietnamese market's particular environmental challenges, social norms, and governance structures.

Among the top 100 Vietnamese companies from 2017 to 2023, this study intends to investigate the relationship between ESG practices and financial performance. The study will provide investors, regulators, and the companies themselves important insights by examining how these companies integrate and report on ESG factors and the effects on their financial health. Furthermore, it will contribute to the body of knowledge on sustainable business practices in developing Southeast Asian markets, inform Vietnamese corporate strategy, and influence policy-making. Vietnam's rapidly changing economic and regulatory environment highlights the importance and urgency of this research, which is to clarify the intricate relationships between sustainable business practices and financial viability.

2. Literature review

2.1. Resource-based view theory (RBV)

According to the RBV theory, a firm's competitive advantage is derived from the efficient use and management of its resources, which can be either intangible or tangible [15]. A place where resources are concentrated and combined more effectively than the market is referred to as a business. If companies possess the best resources and can allocate them more skillfully than their rivals, they will prosper [16]. Analyzing internal resources and connecting them to the external environment are the main goals of RBV theory [15]. Accordingly, developing and utilizing the company's core capabilities and resources gives it a competitive advantage. Since it views ESG factors as strategic resources with the potential to increase a company's competitiveness, this theoretical framework is especially pertinent when examining the relationship between ESG practices and financial performance.

Previous studies have used this theory to study ESG and the competitive advantage of businesses [17], improvement in governance activities [4], and operational efficiency [18]. This research focuses on the financial performance component of ESG's impact on corporate operations. Using the RBV theory, integrating ESG criteria into business operations in the context of the top 100 Vietnamese companies can be understood as leveraging intangible assets like

stakeholder trust, employee satisfaction, and corporate reputation. In markets where consumers are becoming more cautious, these resources are essential for maintaining competitive advantages [8]. Businesses in Vietnam can achieve better financial performance and resilience in a changing economic environment by strengthening governance structures, improving their environmental and social impacts, and improving their ESG practices.

2.2. Stakeholder theory

Stakeholder theory is developed to resolve conflicts of interest among stakeholders [19]. However, specific mechanisms have not yet been provided to determine the nature of these conflicts and how to resolve them. Integrating ESG elements into the decision-making process can help resolve tensions between different stakeholders [18]. The theory is a solid foundation to guide corporate behavior. The purpose of business is to optimize corporate value, but it is still necessary to respect environmental, social, and community factors.

This theory also holds that the better a company manages its relationships with all stakeholders, the more successful it will be over time [20]. ESG activities can be transferred or combined with the company's market operations, thereby enhancing the company's reputation and leading to better and more sustainable financial performance [21]. This theory has been used by scholars to study the relationship between ESG and firm performance [5], [22], [23]. The results found that ESG positively affects a company's performance because ESG activities can resolve conflicts between managers and stakeholders [21]. This implies that the policies of proactive ESG initiatives are instrumental in protecting profits as well as increasing shareholder value. Entities participating in the Vietnamese market are increasingly interested in ESG activities of businesses [4]. Therefore, this theory is suitable for use to consider the financial performance of companies from the perspective of social responsibility.

2.3. Hypotheses development

ESG stands for Environmental, Social, and Governance, a trio of criteria that extends beyond traditional financial metrics to help investors assess the viability of their investments [24]. ESG got its start in the 1970s when South Africa's racial segregation problems caused a large amount of investments to be withheld for moral reasons. Furthermore, a string of large-scale environmental catastrophes highlighted the dangers of supporting irresponsible companies, emphasizing the possibility of severe financial losses and even bankruptcy [25]. As a result, the idea of Socially Responsible Investing (SRI) was born. SRI is centered on developing a financial model that seeks to produce favorable social and environmental effects in addition to increasing a company's value. This idea has changed substantially over the years. A collection of metrics

known as ESG assesses a business's ability to create long-term value for society as a whole as well as for its shareholders [26].

This group of indicators is divided into three categories [2]. Environmental, which gauges a business's attempts to reduce harm and its effect on the environment. Social, which evaluates the way the business handles its workers, vendors, and clients. It also advocates for fair work practices, gender parity, and funding for charitable causes. Governance measures a company's reporting transparency and the harmony of communication between shareholders and management. A comprehensive indicator of a company's efficacy from several angles is the ESG rating, which incorporates all three factors.

The integration of ESG practices into corporate strategies has garnered significant attention from scholars [9], [5], [6]. These studies highlight how businesses incorporate ESG factors into their management and operational processes, potentially improving firm performance over time [6], [5], [27]. Firm performance is a measure of how effectively a company uses and manages its financial resources to generate value for shareholders and other stakeholders [28]. It is assessed through both accounting and market factors [29]. There are various financial indicators in which the ROA is commonly used [4], [30]. Given that Vietnamese companies have a significant amount of financial leverage, this index is particularly appropriate for them [31]. The Return on Assets (ROA) is an accounting metric that reflects the profitability of a company's assets, indicating how efficiently a company is using its assets to generate earnings. However, Tobin's Q, a market metric, assesses a company's market value against the replacement value of its assets to reveal what the market believes about the company's prospects [32]. Combining these two variables provides a more thorough assessment of firm performance from the standpoints of internal management and the market.

The analysis of 146 European mutual funds provides evidence of the superior efficiency of funds investing in high ESG-rated securities [33]. However, another researcher identified incomplete data as a significant challenge in ESG research, noting the wide variance in the impact of ESG factors on business efficacy across established stock markets [34]. From 2002 to 2016, ESG-ranked companies showed varied performance, ranging from 7% in Singapore to 35% in Ireland. In the U.S., an average of 21% of companies achieved high ESG rankings. Empirical studies examining the relationship between ESG practices and financial performance present mixed and contradictory results [29]. For instance, a research argued that shareholder engagement on ESG issues could improve a company's Tobin's Q ratio of US S&P 500 listed companies [9]. Conversely, a paradox where companies with high ESG disclosure scores often generated lower profits than those with lower scores was observed [35].

Although studies on the precise effects of ESG practices on financial performance have not all come to a consensus, this study expects that ESG integration will help Vietnamese companies become more financially efficient and pursue long-term, sustainable development. According to stakeholder theory, ESG practices help resolve conflicts of interest between stakeholders [20], that are increasingly of public interest in Vietnam, thereby protecting the interests of shareholders. ESG also helps companies become more marketable, perform better financially, and have higher market value. From there, the following research hypothesis is proposed:

Hypothesis H1. ESG practices have a positive impact on financial performance.

Financial performance is influenced by several factors in addition to ESG. The size of the company is one of the traditional determinants [13]. The performance of the company is impacted by its size for several important reasons. The larger the scale, the advantage of scale will help the company save costs [36]. Large scale also helps the company attract better customers from its reputation [6]. Additionally, because they have stronger resources, larger businesses will find it easier to adjust to shocks and pressures from the outside world [37]. However, the size of the company also contains the risk of default and volatility of assets. In principle, large and small businesses have the same probability of growth over a certain period [13]. Afterward, the connection between corporate size and financial performance is both an empirical and a theoretical issue. Some studies conclude that there is a dependency relationship between firm size and firm performance, which can be both negative and positive [38], [39]. Regarding the application of ESG in Vietnam, firm size is anticipated to have a positive effect on the business since it raises stakeholder credibility. From there, the following research hypothesis is proposed:

Hypothesis H2. Firm size has a positive effect on financial performance.

Firm age is also identified as a factor that can effect a company's financial performance. The influence mechanism is identified through the customer's habit of using products and services, and the reputation and prestige of the brand [40]. Previous research shows different effects of firm age on financial performance [37], [41], [42]. First, the younger the company, the more likely they are to prioritize short-term capitalism and value preservation over long-term risk innovation strategies. From there, it is anticipated that younger businesses will be more negatively impacted than older ones [37]. Established companies often have better financial histories, making it easier for them to access capital from banks or investors. Secondly, young companies have better conditions for improvement, from which financial results are higher [41]. The results of the previous study were in the context of adverse macroeconomic conditions, for example, a crisis occurred. This may explain why the owner's commitment and involvement

decrease as the company ages, leading to age liability when the company relies too heavily on rigid habits and finds it difficult to adapt to those changes [42]. Established companies also face challenges such as changes in the market, changes in customer needs, and the risk of becoming obsolete [37]. Firm performance may suffer if innovation or adaptation isn't done quickly enough [38]. Businesses implementing ESG initiatives in Vietnam must be well-resourced and experienced. ESG efficiency is anticipated to be higher at companies with a longer lifespan because young companies are typically small businesses with limited resources. From there, the next research hypothesis is expected:

Hypothesis H3. Firm age has a positive effect on financial performance.

Using financial leverage is one of the solutions to help businesses increase capital for business activities. When businesses use debt, they can invest more in profitable opportunities, leading to higher returns if these investments perform well [22]. Research in enterprises with ESG integration in 383 companies in developing and developed countries shows that financial leverage offers opportunities to increase financial performance [22]. However, capital is not always used efficiently [43]. Debts, if not managed well, will have a negative impact on financial performance. This result has been confirmed for 285 companies in Pakistan [44]. Moreover, the problem of excessive debt can lead to underinvestment leading to poor performance. So, even if companies with high financial leverage with a positive net present value are still unable to borrow new debt [45]. The majority of Vietnamese businesses rely on loans to operate. Within the framework of ESG integration, this research also anticipates that businesses will utilize these constrained funding sources efficiently. From there, the following research hypothesis is proposed:

Hypothesis H4. Financial leverage has a positive effect on financial performance.

Gross Domestic Product (GDP) is an important indicator to measure a country's economic growth [46]. It not only represents the total number of goods and services produced in a year but is also effected by economic policies and regulations [47]. These factors determine how businesses operate and how they use their production capacity [48]. GDP is found to have a significant impact on financial performance [49]. This effect is caused by specific mechanisms. A rise in GDP typically corresponds with higher consumer and business spending. Revenue growth for the business frequently boosts profitability and strengthens its finances [50]. Both domestic and foreign investment are typically drawn to economies with high GDPs. This may result in interest rates falling, which would make it simpler for companies to borrow money and grow [5]. Businesses have a stronger incentive to innovate and improve performance when the economy grows well, helping them to increase their competitiveness and optimize their profits [46].

However, GDP also has a negative impact on financial performance [51]. As a result, the effects of GDP on business efficiency differ depending on the situation. The majority of ESG initiatives in Vietnam are voluntary, which will benefit the business in a good economy. From there, the following hypothesis expectation research:

Hypothesis H5. GDP has a positive impact on financial performance.

The nature and composition of the industry in which the business works have an impact on financial performance as well. Industry has a significant impact because it influences different opportunities, and the efficiency and availability of the external market [52]. While less competitive industries can benefit from monopolies, highly competitive industries frequently put pressure on prices and profit margins [53]. The manufacturing industry can have high or low variable costs, effecting profitability [54]. Industries with low production costs and effective supply chains frequently enjoy a stronger competitive advantage [12]. The technology sector, including biotechnology and information technology, can develop new goods and services that will enable companies to quickly increase their market share and revenue [55]. The financial sector is subject to numerous, stringent regulations, which can have an impact on profitability and operating costs [56]. Businesses with strong resource positions and industry leadership are those listed on the Vietnam Stock Exchange. From there, the expectations of the study on the characteristics of the industry are as follows:

Hypothesis H6. Industries that have a positive impact on financial performance.

3. Research methodology

3.1. Research model

Using the theoretical and empirical underpinnings discussed, the following regression model is suggested:

$$PERF_{it} = \alpha_0 + \alpha_1 ESG_{it} + \alpha_2 SIZE_{it} + \alpha_3 AGE_{it} + \alpha_4 LEV_{it} + \alpha_5 IND_{it} + \alpha_6 GDP_{it} + \varepsilon_{it} \quad (1)$$

The subscripts "i" and "t" in equation (1) stand for a firm and a year, respectively. "Ɛ" stands for the error term, and "α" indicates the size of the effect.

- **Dependent variable**

Financial performance, which is determined by both accounting and market factors, is the dependent variable. Return on Assets (ROA) is a metric that is used to measure a company's accounting effectiveness and to predict its short-term financial performance. The return on assets (ROA) ratio shows how well a company uses its assets to generate profits [46]. Moreover, Tobin's Q ratio, which is frequently employed to evaluate long-term financial effectiveness, depicts the market factor as the dependent variable [32]. Tobin's Q is a powerful tool for determining a

company's market value because it reliably reflects investor expectations, including those of creditors and equity owners, regarding the total asset value of the business [57]. This ratio is computed in this study by dividing the market capitalization by the total assets of the company for the year.

- **Independent variable**

The independent variable is ESG. The most popular framework for producing sustainability reports worldwide is the GRI (Global Reporting Initiative) standards, specifically the 2016 and updated 2021 editions. These guidelines cover a wide range of disclosures, such as specific data about social, environmental, and economic dimensions as well as general corporate information [58]. To handle new sustainability challenges in the areas of ESG, the GRI will integrate governance-related factors by 2021. Environmental requirements, for instance, require the reporting of greenhouse gas emissions, waste production, fines, wastewater release, total amount of raw materials used in production, energy consumption (both direct and indirect), and programs and actions aimed at lowering emissions [59]. The purpose of social performance indicators is to draw attention to important issues related to human rights, labor, community impact, and product responsibility [60]. Successful corporate governance frameworks also emphasize the significance of procedures and organizational structures, including management roles [7].

To help Vietnamese businesses align with international sustainability standards, the Ministry of Finance published Circular No. 155/2015/TT-BTC in 2015, which outlined particular environmental and social disclosure guidelines for businesses that are publicly traded. With the release of Circular No. 96/2020/TT-BTC in 2020, the governance information criteria were improved and further updated. Nonetheless, there is still disparity and fragmentation in the consistency and integration of ESG disclosures and scoring among Vietnamese enterprises. To evaluate the sustainability reporting of the top 100 Vietnamese companies from 2017 to 2023, as shown in Table 1, a customized set of standards was created based on the GRI standards and the requirements of Circulars 155/2015/TT-BTC and 96/2020/TT-BTC.

Table 1. ESG measurement

Descriptions	Indicators
Environmental dimension (E)	
Raw material management	E1_Total amount of raw materials used in the production and packaging of the firm's major products and services within the year.
	E2_Percentage of recycled materials used to produce the firm's products and services.
Energy consumption	E3_Direct and indirect energy consumption
	E4_Energy savings through improved energy efficiency
	E5_Reports on energy efficiency initiatives and the outcomes of these initiatives.
Water consumption	E6_Water supply sources and water consumption.
	E7_Percentage of water recycled and reused
Environmental law compliance	E8_Number of fines due to non-compliance with environmental laws and regulations.
	E9_Total of fines due to non-compliance with the environmental laws and regulations.
Emissions	E10_Total direct and indirect greenhouse gas (GHG) emissions.
	E11_Intitiatives and measures to reduce GHG emissions
Social dimension (S)	
Employee-related policies	S1_Number of employees
	S2_Average salary of employees.
	S3_Labor policies ensuring health, safety, and welfare of employees.
	S4_Average training hours per year.
	S5_Skill development and life-learning programs to sustain job and career development.
Community responsibility	S6_Community investment and development including financial support.
Governance dimension (G)	
Structure and composition of governance	G1_Description of governance structure, including the top management structure.
	G2_Listing the top governing body responsible for making decisions and supervising the firm impact management in terms of economics, environment, and people.
	G3_Description of the top management and its committees.
Chair of the top management	G4_Report whether the chair of the top management is also a chief executive officer (CEO).
Role of the top management in supervising impact management.	G5_Description the role of the top management and senior executives in developing, approving, and updating the firm's missions, visions, values, strategies, and policies relating to sustainable development.
	G6_Description of the roles of the top management in supervising the firm evaluation and other processes to identify and manage its impact in terms of economics, environment, and people.
Remuneration policies	G7_Desription of remuneration policies for members board and senior executives.

Annual and sustainability reports, among other reports with pertinent data, were gathered and examined by the writers to gauge the extent of ESG disclosure among companies. The criteria list, which was broken down into three pillars, served as the basis for the analysis. The pillars were the Environmental (11 indicators with a maximum score of 33 points), social (6 indicators with a maximum score of 18 points), and governance (7 indicators with a maximum score of 21 points). Following the previous research, the ESG scoring method shown in Table 2 was created [61], [62], [35]. Depending on the level of detail in the information disclosure, the information was converted into quantitative data and measured on a scale of 0, 1, 2, or 3. Equation (2) is used to determine the ESG score for firm i in year t after determining the points for the firm annually:

$$ESG_{it} = \frac{E_{it}+S_{it}+G_{it}}{n} \times 100 \quad (2)$$

In equation (2), ESGit represents the ESG score of firm i in year t, expressed as a percentage; Eit is the score for the environmental pillar for firm i in year t; Sit is the score for the social pillar for firm i in year t; Git is the score for the Governance pillar for firm i in year t; n is the total maximum score possible for the three pillars with the maximum of 33 + 18 + 21 = 72.

Table 2. ESG scoring

Score	Description	Quantitative indicators	Qualitative indicators
0	No information	No information	No information
1	Basic information	General information	General information
2	Full information	General dimensions and indicators	General and specific policies
3	Deep information	Full information + explanations /interpretations /discussions	List the policies with notes

- **Control variables**

The incorporation of control variables is based on established literature and prior empirical studies. The model of firm financial performance incorporates factors such as firm age, size, leverage, and economic development, anticipating positive effects [37], [49], [63]. Consistent with the previous scholar [63], this study also conducts an industry-specific analysis to explore differences between firms in industrial product markets and those in other sectors. Table 3 summarizes the definitions and proposed measurement sources of control variables.

Table 3. Control variables

Variable	Description
AGE (Firm age)	The firm age is calculated based on the number of years since its establishment up to the end of the studied year.
SIZE (Firm size)	Natural logarithm of total assets.
LEV (Financial leverage)	Financial leverage is calculated as the ratio of debt to total assets.
IND (Industry)	1: Manufacturing industry 0: Otherwise
GDP (Economic growth rate)	GDP per capita growth rate (%)

3.2. Research data

This research analyzes the 100 biggest Vietnamese companies, or the VN100 index, which is made up of companies with high market capitalization, liquidity, and transferability rates. Twenty of these are leaders in sustainability reporting and are regularly included in the VNSI index, which rates listed companies using more than 100 criteria that are drawn from the GRI standards and OECD corporate governance principles. The Ho Chi Minh City Stock Exchange provided the list of companies. Because it covers a wide range of industries, including both manufacturing and non-manufacturing sectors like real estate, insurance, retail, and consumer goods, the VN100 index provides a broad scope for research. Through content analysis of annual and ESG reports, data on ESG disclosures were directly gathered. A variety of variables were downloaded from the VietstockFinance website, including financial data (such as ROA and Tobin's Q), firm size, age, financial leverage, and industry. Furthermore, data from the World Bank's World Development Indicators (WDI) for the same period were collected, which show GDP per capita as a measure of overall economic growth. The research evaluates the effect of ESG on the financial performance of the company using a panel data regression model and methods including Pooled OLS, Fixed Effects Model (FEM), and Random Effects Model (REM).

4. Findings and discussions

4.1. Descriptive statistics

Table 4. Descriptive statistics

Variables	Observations	Mean	Min	Max	St. Dev.
ROA	408	6.54	-6.41	50.77	7.29
Tobin’s Q	408	0.86	0.03	6.92	0.88
ESG	408	49.66	0.00	97.22	17.97
AGE	408	27.01	7.00	66.01	12.31
SIZE	408	39.88	27.71	35.29	1.65
LEV	408	57.26	2.17	95.10	22.68
GDP	408	5.13	2.58	8.03	2.42
IND	408	0.33	0.00	1.00	0.46

Eight variables in the firm financial performance model with 408 observations are included in the dataset (Table 4), which offers a thorough examination of various financial, firm, and economic indicators. Return on Assets (ROA) displays a standard deviation of 7.29 and a mean of 6.54, with values ranging from a minimum of -6.41 to a maximum of 50.77. These figures demonstrate the variability in the firm's profitability. Tobin's Q ranges from 0.03 to 6.92, with an average of 0.86, indicating a range of market valuations for the company's assets about their market value. With a wide range from 0 to 97.22, ESG scores average 49.66, reflecting the different levels of sustainability practices among the firms.

Firm size, measured by the log of assets, has an average value of 30.89 with a tight range from 27.71 to 35.29, indicating a sample made up primarily of large companies. Leverage, defined as the percentage of debt relative to total assets, averages at 57.26 with a very wide range from 2.17 to 95.10, highlighting significant differences in capital structures across the firms. The GDP per capita growth rate (GDP%) is another feature of the dataset that has an average of 5.13 and a minimum and maximum value of 2.58 and 8.03, respectively. A third of the companies are classified as belonging to the manufacturing sector, as indicated by the binary Industry variable (IND) with a mean of 0.33.

4.2. Correlation analysis

Numerous noteworthy correlations between the variables are shown in the dataset's correlation matrix. Tobin's Q and ROA, two dependent variables that measure a firm's financial performance, have a strong positive correlation of 0.721, meaning that companies with higher asset returns typically have higher market valuations about their asset base.

Table 5. Correlation analysis

	ROA	Tobin's Q	ESG	AGE	SIZE	LEV	GDP	IND
ROA	1.000							
Tobin's Q	0.721***	1.000						
ESG	0.031	0.148***	1.000					
AGE	0.011	0.041	0.162***	1.000				
SIZE	-0.363***	-0.348***	0.138**	0.199***	1.000			
LEV	-0.552***	-0.572***	-0.058	0.012	0.657**	1.000		
GDP	-0.000	-0.168***	0.039	0.014	0.008	-0.039	1.000	
IND	0.209***	0.137***	0.288***	-0.292***	-0.248***	-0.339***	0.001	1.000

Notes: *** significant at 1%; ** significant at 5%

Leverage and financial performance (ROA, Tobin's Q) have a noticeable negative correlation (-0.552 and -0.572, respectively), which raises the possibility that higher debt levels are linked to lower returns on assets and that higher debt may have a negative effect on market valuations. Businesses in some manufacturing industries may have higher asset returns and market valuations, as suggested by the positive correlations between ROA and Tobin's Q and IND. Tobin's Q and ESG scores have moderate correlations (0.148). The relationship between size and ROA and Tobin's Q is negative (-0.348 and –0.363, respectively), suggesting that larger companies may not always produce higher returns or market valuations. Tobin's Q and GDP are negatively correlated (-0.168). Overall, by demonstrating the interactions between different variables such as size, leverage, industry, financial performance, and market valuations, these correlations shed light on the structural features and financial dynamics of businesses (Table 5). Most of the independent variables have modest correlation coefficient magnitudes. All of the Variance Inflation Factor (VIF) coefficients are less than 5, according to the multicollinearity test results displayed in Table 6.

Table 6. VIF Results

Variables	VIF	1/VIF
SIZE	2.09	0.48
LEV	1.96	0.51
IND	1.39	0.70
AGE	1.20	0.83
ESG	1.18	0.85
GDP	1.01	0.99

4.3. Regression analysis results

The authors employed the Pooled OLS, REM, and FEM methods for regression analysis after verifying and testing the lack of multicollinearity. Appropriate tests were then performed to ascertain the reliability of the regression outcomes. The FEM model was chosen over Pooled OLS because the F-test result with a p-value of 0.000, which is less than the traditional significance level of 0.05, led to the rejection of the null hypothesis (var u=0). The null hypothesis was rejected because the Hausman test produced a p-value of less than 0.05. Thus, the research findings were interpreted using the FEM model (Table 7).

Table 7. Regression results

	OLS		FEM		REM	
	(1)	(2)	(1)	(2)	(1)	(2)
ESG	-0.000	0.010***	-0.002	0.000	0.000*	0.009**
	(0.018)	(0.000)	(0.029)	(0.002)	(0.022)	(0.000)
AGE	0.012	0.000	-0.451	0.037*	0.000*	0.008
	(0.033)	(0.000)	(0.029)	(0.022)	(0.042)	(0.000)
SIZE	0.032	-0.000	3.031**	-0.059	-0.011**	-0.043
	(0.269)	(0.028)	(1.269)	(0.102)	(0.398)	(0.399)
LEV	-0.179***	-0.021***	-0.108***	-0.009**	-0.152***	-0.023***
	(0.023)	(0.000)	(0.042)	(0.000)	(0.023)	(0.000)
GDP	-0.068	-0.702***	-0.024	-0.071***	-0.062	-0.072***
	(0.131)	(0.012)	(0.090)	(0.000)	(0.092)	(0.000)
IND	0.261	-0.242***	0.432	0.376	0.761	-0.123
	(0.761)	(0.081)	(0.043)	(0.018)	(1.210)	(0.152)
Cons	16.101**	2.370***	-68.152	2.684	15.172	3.022**
	(7.341)	(0.821)	(33.431)	(2.630)	(11.062)	(1.254)
	N=400 F(6, 393) = 29.31 Prob > F = 0.000 R-squared = 0.309 Adj R-squared = 0.298	N=400 F(6,393)=44.48 Prob>F = 0.000 R-squared = 0.404 Adj R-squared =0.395	N=400 R-sq within = 0.031 R-sq between = 0.010 R-sq overall =0.006 F(5,295) = 1.94 Prob > F = 0.087	N=400 R-sq within =0.286 R-sq between =0.133 R-sq overall=0.1460 F(5,295)=23.72 Prob>F =0.000	N=400 R-sq within=0.0132 R-sq between =0.412 R-sq ovarall=0.307 Wald chi2(6) = 61.51 Prob > chi2 = 0.000	N=400 R-sq within=0.274 R-sq between=0.421 R-sq ovarall=0.393 Wald chi2(6)=174.01 Prob > chi2 = 0.000

Notes: ***, **, * significant at 1% , 5% and 10% respectively; Std.Err in bracket; (1) ROA is dependent variable; (2) Tobin's Q is dependent variable

For companies included in the VN100 Index, which is a compilation of the top 100 Vietnamese companies by market capitalization, the research findings from the FEM model show no statistically significant relationship between ESG and firm financial outcomes, specifically measured by ROA and Tobin's Q. The results did not confirm the H1 hypothesis and similar to research in the G7 countries [64]. There may be several reasons, including those unique to the Vietnamese market and the traits of the companies in the index, for the lack of discernible effects of ESG practices on financial performance and market valuation.

Firstly, Vietnam is an emerging market with distinct investor behaviors and market dynamics that set it apart from economies that are further developed. Since emerging markets like Vietnam typically have shorter investment horizons, investors in these areas may be more interested in short-term financial returns and growth potential than in long-term sustainability practices. This emphasis may overlook ESG factors, which are frequently seen as long-term investments in social responsibility, environmental sustainability, and corporate governance [23].

Secondly, the analysis shows that the studied companies' average ESG score is 49.66%, below the average threshold of 50%. This shows that the leading Vietnamese companies have an overall moderate level of ESG engagement. Only 28% of the companies have a clear ESG program, which is consistent with the results of a survey on ESG readiness in Vietnam. The relatively low baseline of ESG practices may be due to a combination of factors such as lax regulatory requirements and a corporate culture that has not yet fully valued and integrated ESG principles [65]. It may also reflect the early stages of ESG integration into corporations in Vietnam and suggest that current levels of ESG compliance may not have a significant impact on market perceptions or financial performance.

Thirdly, in emerging markets, the value placed on ESG by the investment community can significantly influence how these factors impact firm valuation [66]. Investor perceptions regarding ESG as a value driver and the relationship between ESG compliance and financial success are likely to influence how much the firms are valued on the market [22]. ESG will not be a major factor in investment decisions in Vietnam just yet, as investors' knowledge and awareness of ESG issues are still growing, in contrast to more developed markets where sustainable practices are better understood and valued.

According to these findings, more extensive regulatory changes, improved investor education regarding the advantages of ESG, and a shift in corporate culture toward more sustainable business models may be required for ESG factors to gain greater weight in financial performance. Furthermore, this could predict a slow change in investor priorities as global ESG standards spread to developing nations. As a result, sustainable practices might become more important, which might then start to have a bigger influence on financial metrics and firm valuations.

The model indicates that while ESG is not significant, other factors like GDP growth rate, age, size, and leverage have a notable impact. The results confirm the hypothesis H2, H3, H4, H5, H6, and similar to the previous study [13], [51], [43], [47]. These findings underscore the complex interplay between various factors that impact a firm's profitability and market value. In particular, negative GDP and size point to difficulties associated with growing businesses and recessions, while negative leverage coefficients attest to the risk-related expenses of high debt loads. The established firms may command a premium because of their perceived stability and dependability, as indicated by the positive coefficient for age.

Although ESG does not show up as a significant predictor in this model overall, its importance should not be undervalued in broader strategic considerations due to the complexity of market dynamics and the evolving nature of sustainability in business practices. Subsequent

investigations could concentrate on finer-grained analysis or alternative scenarios in which ESG impacts could be more noticeable.

5. Conclusions

This research analyzes the dataset of the top 100 Vietnamese companies listed on the stock market (Vietnam's VN100 Index), using the Pooled OLS, FEM, and REM models. The FEM model has been chosen to interpret the study's results. Among the biggest Vietnamese companies, ESG factors currently have little bearing on the financial performance metrics of ROA and Tobin's Q. This lack of presence may be a sign that the Vietnamese market places more value on short-term profits than it does on long-term sustainability obligations. It is imperative, nevertheless, to take into account the influence of additional important factors that have demonstrated a significant impact on corporate profitability and market valuations, such as firm age, size, leverage, and GDP growth rates.

With the world changing and ESG standards making inroads into developing economies, it is expected that the importance of ESG considerations will grow as regulatory frameworks develop and investor attitudes turn more toward sustainability. This change may increase the weight that ESG considerations have in upcoming financial analyses.

The results indicate that policymakers and businesses in Vietnam must work to strengthen the ESG framework and improve investor education about the long-term advantages of ESG integration. Ultimately, while ESG is not a determinant of financial performance in Vietnam at the moment, its significance is likely to increase as market conditions change, according to this research, which emphasizes the dynamic nature of market valuation factors. It is advised that more research be done to consistently evaluate the influence of ESG factors under various market circumstances and over various periods.

6. Research limitations

Research still has certain limitations even though it has significantly advanced theoretical and practical fields. Specifically, the study ignores other relationships and concentrates solely on analyzing how ESG affects financial performance. This might have overlooked other significant discoveries. For a more comprehensive perspective, the study may therefore examine other relationships in the future.

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