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ESG Score and Firm Performance: Study of Environmentally Sensitive Companies in Emerging Market Countries

Mohammad Iqbal [1*]
(miqbalfaruq@gmail.com)
Faculty of Economics and Business, Universitas Indonesia, Jakarta, Indonesia

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ABSTRACT

This study investigates the effect of ESG Score on firm performance (operational, financial, and market) in environmentally sensitive industries. This study analyzes the effect of ESG score to firm performance before and during the Covid-19 pandemic crisis in emerging market countries to see from different perspectives to complement the gaps in existing research. To test the hypotheses, researcher used regression with panel data using the Thomson Reuters Refinitiv Eikon™ database to analyze data from 704 environmentally sensitive listed companies selected from 16 emerging market countries between 2016 and 2021. The findings obtained from the empirical results show that there is no significant relationship between ESG Score and operational performance (ROA), financial performance (ROE) and market performance (TQ) of companies before the Covid-19 pandemic crisis. Another finding is that there is no significant relationship between ESG Score and ROA, ROE and TQ during the pandemic crisis. This study highlights whether the Covid-19 pandemic contributes to the relationship between ESG Score and firm performance, especially for environmentally sensitive industries in emerging market countries.

Keywords *: ESG; Emerging Markets; ESG Score; Firm Performance.*

1. INTRODUCTION

The world is confronted with a number of environmental and societal concerns as time goes on. The two key problems are the expanding world population and the growing danger from climate change. The effects of climate change, as well as local pollution and resource shortage challenges, are most noticeable in developing and developed countries.

In the upcoming years, these difficulties are probably going to get worse (Odell & Ali, 2016). Extreme weather events linked to climate change are occurring more frequently and severely, and pollution levels are rising. Asia, Africa, and Latin America are among the continents that are most severely affected by typhoons, floods, and droughts. It is estimated that the 2013 typhoon Haiyan cost the Philippines more than $13 billion in economic losses. The catastrophic drought conditions in eastern and southern Africa brought on by the El Nino weather pattern this year have made an already difficult macroeconomic climate even more difficult (Hossain, 2022). Alternately, according to Odell & Ali, (2016), cities with poor air quality, like Beijing, and problems with waste management, like Dhaka, raise awareness of how local environmental issues can affect economic productivity and, consequently, government policies. According to RAND Corporation estimates, the Chinese economy suffers annual losses of 6.5% of GDP due to health expenditures associated with air pollution and decreased labor productivity.

Policymakers are working to reduce the factors that can hasten climate change. At the international level, a number of actions have been taken to address and combat climate change and its effects. Examples include the Lima Convention (2014), the Montreal Protocol (1987), the Kyoto Protocol (1997), the Bali Action Plan (2007), the Copenhagen Accord (2009), the Durban Platform (2011), the Doha Gate (2012), the Warsaw Convention (2013), and most recently, the Paris Agreement (2016) (Hossain, 2022).

The Kyoto Protocol, which aimed to bring the world's nations together to examine their emissions, create sustainable plans, and put those plans into action, was technically replaced by the Paris Agreement. According to the Paris Agreement, the net increase in global temperature from pre-industrial levels should be less than 2°C by the year 2100. The need to keep global warming to 1.5C above pre-industrial levels is also emphasized by the accord. Industry will be indirectly impacted by this strategy, particularly sectors with an interest in climate change, such as those that deal with environmental issues (Naeem et al., 2022). Companies must consider methods and plans to achieve sustainability in response to the agreement. As a result, authorities and investors are paying more attention to environmental, social, and governance (ESG) factors in order to achieve sustainable development. As a specific illustration, several businesses have started to concentrate on sustainability strategies such waste management, carbon reduction, and enhancing operational skills (Eccles & Serafeim, 2013).

A corporation can acquire a competitive edge in the market and improve financial performance by investing in ESG initiatives (Freeman, 1984). Companies that want to adopt sustainability demand that these practices increase the company's value while providing benefits to all stakeholders. Businesses should take into account the interests of all parties involved in the business in addition to providing value and profits for owners or shareholders. The shareholder theory, on the other hand, contends that businesses should focus on increasing owner value and profits and should exclusively operate for the advantage of shareholders or owners (Friedman, 1970).

Economic theory and finance management have long recognized the impact of business environmental, social, and governance (ESG) operations. Numerous academics have attempted to compile the research that has been conducted to examine the impact of ESG on corporate sustainability from various angles. Friede et al., (2015) conducted one of them, documenting more than 2200 empirical research that looked at the connection between ESG practices and corporate financial success. There is a good correlation between the two according to the study's overall findings. Whelan et al. (2021) from Rockefeller Asset Management and NYU Stern Center for Sustainable Business looked into more than 1000 articles published between 2015 and 2020 that focused on the relationship between ESG and financial performance. They found that 58% of articles showed a positive relationship between ESG and financial performance, 8% a negative relationship, 13% no relationship, and 21% mixed results. Despite the majority of responses being favorable, it can be inferred from the findings that there is still a disagreement over these topics.

By looking over 755 ESG-related articles, Wan et al. (2023) conducted the most recent research, which identified hotspots and trends in ESG research and provided a research agenda for next studies. ESG practices, according to the report, are both socially responsible and a means of enhancing a company's reputation for excellence. There is ample evidence of the connections between ESG and company operations, corporate governance, risk, cost of capital, and firm performance. The paper makes numerous recommendations for further research on ESG, including studies on the driving forces behind and financial ramifications of ESG in the context of emerging markets.

According to Daugaard (2020), examining ESG performance in developing markets is crucial for both investors trying to diversify their portfolio risk and low-income countries looking to investigate and comprehend potential ESG repercussions and opportunities. Moving from established to emerging market nations has a stronger influence on several ESG-related issues (Odell & Ali, 2016). In many emerging market nations, problems including child labor, environmental pollution, poverty, and corruption frequently take center stage. They investigate and outline the rationale for and methods through which developing market nations might profit and reduce risks by concentrating on ESG concerns. Due to the nature of emerging economies, businesses operating there confront both tremendous potential and numerous obstacles when taking ESG factors into account.

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Even though ESG is well-liked and expanding in more developed nations, interest in ESG concerns is significantly lower and there has not been a significant increase in interest in emerging economies (Järvinen, 2022). Limited disclosure, weak capital markets, and various ownership arrangements of businesses in emerging market nations are some of the causes of this (Odell & Ali, 2016). This is counterintuitive because investing in companies in emerging market countries should require investors to consider ESG factors more than investing in developed country companies due to corrupt governments, lax human rights protections, and environmental concerns.

Research that looks at the relationship between ESG score and corporate performance of emerging market companies in various industries and produces mixed results (Aboud & Diab, 2018; Fernando et al., 2022; Garcia et al., 2017; Järvinen, 2022; Khemir et al., 2019; Makhdalena et al., 2023; Naeem et al., 2022; Prabawati & Rahmawati, 2022). The majority of research findings indicate that there is no meaningful connection between business financial performance and ESG performance. However, if examined in a narrower context, as in Järvinen's article (2022), which investigates the impact of ESG on financial performance in BRICS (Brazil, Russia, India, China, and South Africa) countries, it reveals significant and advantageous outcomes.

There are various potential for alternative findings from this study, including whether organizations with higher ESG scores will deliver better corporate financial performance than companies with lower ESG scores. Due to the paucity of academic research in the topic of ESG in emerging countries, The researcher attempts to re-examine the association between ESG performance (via ESG score) and firm performance in emerging market countries by looking from a fresh perspective considering the prior explanation.

One of the views investigated is examining the ESG relationship in certain businesses, particularly environmentally sensitive industry in the year following the signing of the Paris Agreement or data from 2016 and beyond. According to another viewpoint, the relationship between ESG performance and firm performance should be further investigated by including external elements like Covid-19 issues. The Covid-19 epidemic has an obvious impact on a company's sustainability, and because it has an impact on so many businesses internationally, it raises the question of whether a company's profitability may also be measured by its ESG performance.

2. THEORETICAL FRAMEWORK AND HYPOTHESIS FORMULATION

2.1. Main Theories

One of the strategic concerns pertaining to how businesses handle interactions with stakeholders is stakeholder theory. Because stakeholders' existence has the potential to impact or be influenced by the policies adopted by the firm in its business activities, companies are obligated to pay attention to them and offer advantages to them (Bani-Khalid et al., 2017). The concerned stakeholders don't just concentrate on the shareholders. As an example, organizational accountability is included (Donaldson & Preston, 1995). Rather, it encompasses all stakeholders.

The corporation must be able to satisfy the needs and expectations of its stakeholders in every commercial activity it undertakes. This assistance can take the shape of non-financial and financial information disclosure practices, where stakeholders genuinely anticipate management to disclose all completed business operations. To keep up ties and enhance the company's standing with stakeholders, disclosure of company information is crucial. The attention and support provided by stakeholders is anticipated to have a favorable impact on the performance of the firm, specifically through capital participation or investment assistance that can enhance the company's operations and by support for the usage of the company's products by other stakeholders.

The parties to a transaction have varying degrees of information about one another, where the information has value (Akerlof, 1970). Companies view signals as crucial elements that influence how outside parties evaluate their investment decisions. This is consistent with what was revealed (Gumanti, 2009), according to which the signal can be seen as one that was provided to outsiders (investors) and was created by the company (management) itself.

According to the legitimacy theories, businesses must take care to ensure that all of their actions adhere to the social values and norms that are prevalent in the neighborhood where they are located in order to gain the community's legitimacy. It is inevitable that the company's values and the values held by the community may diverge from time to time. The "legitimacy gap"—a term used to describe the gap between corporate value and social worth—can have an impact on a company's capacity to carry on with its business operations. Due to this, businesses must assess social values and make changes to how they are perceived by the public or within the organization itself (O'Donovan, 2002).

2.2. ESG Definition, Framework and Scoring.

ESG elements are defined as "environmental, social, or governance issues that may have a positive or negative impact on the financial performance or solvency of an entity, sovereign, or individual" by the EBA (European Banking Authority). ESG is an investing concept that seeks long-term value growth because it is a sustainable and coordinated development value that takes into account economic, environmental, social, and governance benefits. It is also a thorough, practical, and practical governance strategy. In Europe, America, and other wealthy nations, ESG has been extensively applied since the ESG principle was formally introduced in 2004. A number of accomplishments, such as the creation of ESG evaluation methods, ESG disclosure standards, and ESG index systems supported the growth and maturity of environmental, social, and governance issues as well as ESG as a whole.

ESG scores have expanded quickly in recent years and are now utilized by many of the largest business consulting companies worldwide. Environmental, Social, and Governance practices and performance are identified using ESG scores as a major metric and general indicator. According to Bassen et al. (2008), ESG ratings are helpful in communicating ESG information to investors and other interested parties when assessing organizational risks and possibilities. For corporations and other interested parties, indicators of environmental activity evaluation, social responsibility, and governance systems are crucial (Han et al., 2016). ESG scores are currently published by three major international financial and non-financial data service providers such as Bloomberg, MSCI, and Thomson Reuters based on financial statement analysis. In the paper by (Whelan et al., 2021), which indicated that one of the difficulties in translating ESG values is due to the absence of uniformity with ESG data, this third-party assessment in ESG value assessment has become quite a hot topic.

Due to limitation, in this paper, the writers conducted their research using the Thomson Reuters Refinitiv Eikon database. The Environment value in the database covers a wide range of topics relating to the corporate environment and the interaction between businesses and society, including CO2 emissions, energy consumption, policies for energy efficiency, total waste, and emission reduction measures. The Social Value measures the business social disclosure data (such as fair trade practices, gender equality, employee turnover rate, number of employees, human rights, product safety, and the proportion of women in management and staff). Issues pertaining to corporate governance systems, such as board independence, fraud, bribery, reporting and disclosure, and shareholder protection, are reflected in governance value. The refinitiv website provides a detailed explanation of the computation process. The score system is based on how well ESG components perform in relation to the sector (for governance) and country of incorporation (for environmental and social issues) of the organization. Refinitiv gathered and calculated more than 630 ESG metrics, which were then divided into 10 categories to reformulate the three pillars and final ESG scores. These scores indicate the ESG performance, commitment, and effectiveness of organizations based on information that has been made publically available.

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The following are the 10 categories:
- Emissions (environmental pillar)
- Innovation (environmental pillar)
- Resource Use (environmental pillar)
- Community (social pillar)
- Human Rights (social pillar)
- Product Responsibility (social pillar)
- Labor (social pillar)
- CSR strategy (governance pillar)
- Management (governance pillar)
- Shareholders (governance pillar)

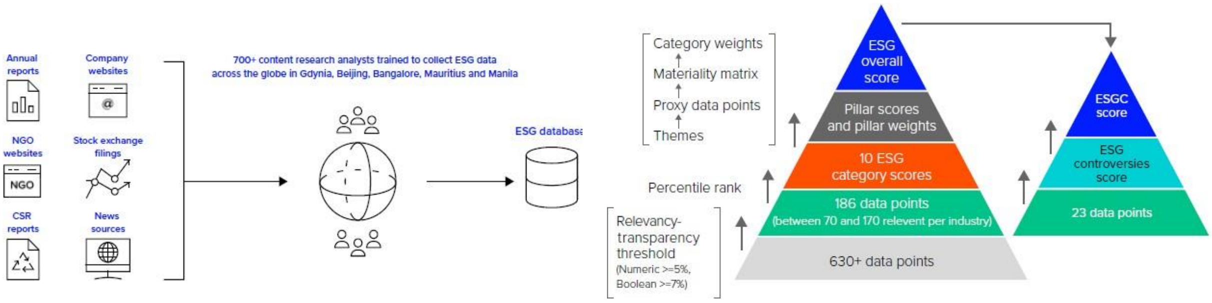

Figure 1: Refinitiv ESG Score Assessment Methodology*Source*:
(https://www.refinitiv.com/content/dam/marketing/en_us/documents/methodology/refinitiv-esg-scores-methodology.pdf)

2.3. ESG and Firm Performance

Adopting ESG strategies and initiatives comes at a major financial cost to the firm. Investors and businesses need to know whether non-financial costs (such ESG investments) lead to financial gains for the company. Numerous studies have looked into how these two relate to one another. Studies on this subject, however, have produced contradictory findings.

Researchers often have three options when determining how well a company is performing: use accounting-based measurements, market-based measures, or a combination of both (A. Buallay, 2019b, 2019a, 2020, 2022b, 2022a; A. Buallay & Al Marri, 2022; Naeem et al., 2022).

The return on assets (ROA) and return on equity (ROE) of a company are two accounting performance-based indicators that are frequently used by researchers (A. Buallay & Al Marri, 2022; A. M. Buallay, 2020) Other researchers, however, have chosen market-based measures (i.e. Tobin's Q) (Dyck et al., 2019). Because accounting-based indicators do not accurately reflect what is happening within the company, they are viewed as being less complex (López et al., 2007). Assuming that shareholders are the main stakeholder group, market-based measures suffer from knowledge asymmetry between managers and shareholders (Cordeiro and Sarkis, 1997). Some studies have combined accounting- and market-based indicators due to the criticism of accounting-based methods (Callan and Thomas, 2009). Consequently, both accounting-based and market-based measures are employed in this research to address the critiques of both approaches.

Numerous empirical research has attempted to look at the connection between operating success and ESG disclosure. According to several of these research, ESG and ROA are favorably correlated. Other studies, however, discovered a poor correlation between ESG and operational effectiveness or ROA. ESG and ROA have been proven to have a negligible association in several research (Renneboog et al., 2008).

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The results for the second factor, ESG and financial performance, are likewise contradictory. The data indicates that investors think ESG disclosure is a costly investment. On the other hand, recent research (Aouadi & Marsat, 2018a; Fatemi et al., 2015) has demonstrated a favorable relationship between ESG and financial performance. Stakeholder theory (Freeman, 1984), which contends that disclosure of sustainability information better serves the demands of other stakeholders (such as debtors, employees, customers, and regulators), supports the positive relationship.

As detailed above, studies on the relationship between ESG disclosure through ESG Score and firm performance (operational, financial and market) have yielded mixed results. Table 1 below shows recent studies regarding the relationship between ESG performance and firm performance.

Table 1: Recent studies of the relationship between ESG performance and firm performance

Firm Performance	Sample		Results	Authors
	Country	Year		
ROA	Brazil, Chile, Colombia, Mexico and Peru	2011-2015	The results show that the relationship between ESG scores and ROA is statistically significantly negative.	(Duque-Grisales & Aguilera-Caracuel, 2021)
ROA	China	2011-2019	There is a positive correlation between a company's ESG index and its performance	(Deng & Cheng, 2019)
ROA	Global	2002-2011	The interaction between ESG and ROA is positive and significant	(Aouadi & Marsat, 2018a)
ROA	ASEAN Developing Countries	2010-2020	ESG has an effect on corporate performance	(Makhdalena et al., 2023)
ROA	25 Countries	2009-2018	Does not have a significant relationship with ROA	(Naeem et al., 2022)
ROE	Global	2002-2011	The interaction between ESG and ROE is positive and highly significant.	(Aouadi & Marsat, 2018b)
ROE	China	2008-2012	The results show that good ESG can indeed improve financial performance.	(Zhao et al., 2018)
ROE	Indonesia, Malaysia, Singapore, Thailand	2013-2017	The results showed that ESG performance has no influence on company performance or market value.	(Junius et al., 2020)
ROE	25 Country	2009-2018	The overall ESG performance of environmentally sensitive companies has a significant positive relationship with	(Naeem et al., 2022)

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			ROE.	
TobinsQ	BRICS	2010-2012	Market capitalization is a key predictor of ESG performance	(Garcia et al., 2018)
TobinsQ	31 Country	2010-2015	There is a positive and significant relationship between environmental performance and corporate governance of banks with Tobin's Q. On the other hand, there is a negative and significant correlation between banks' social performance and Tobin's Q.	(Miralles-Quirós et al., 2019)
TobinsQ	25 Country	2009-2018	ESG performance of environmentally sensitive companies has a significant positive relationship with Tobins Q.	(Naeem et al., 2022)
TobinsQ	Global	2002-2011	ESG is associated with greater firm value	(Aouadi & Marsat, 2018a)
TobinsQ	Malaysia	2010-2013	ESG is statistically insignificant in influencing TobinsQ	(Atan et al., 2018)

ESG practices and implications have grown significantly in popularity in industrialized nations during the past 20 years. Companies operating in developed countries need to manage increasing pressure and regulation from governments and other stakeholders to incorporate ESG schemes into their business strategies due to the increased focus on socio-cultural rights, economic and environmental sustainability, and other stakeholder concerns (Naeem et al., 2022). Contrarily, businesses in developing market nations typically place less importance on or spend less money on ESG activities. Companies in wealthy nations must make significant investments in ESG initiatives, although ESG practices are still in their infancy in these nations (Manrique & Mart-Ballester, 2017). The implications and influence of corporate ESG values on firm performance varied between nations due to variances in the business environment and regulation. All nations, especially developed and developing markets, must maintain social and environmental sustainability. Both areas' regulatory bodies push businesses to adopt sustainability-related practices. Environmentally sensitive businesses are intimately linked to ESG reporting and practice, particularly in the environmental area. The issue is whether developing nations, where ESG principles are more prevalent, would produce the same results as emerging market nations.

In contemporary academic and commercial studies, the effect of ESG strategy and operations on corporate financial performance has come under dispute. The process through which ESG policies affect corporate performance can be broken down into minor and large factors. The performance of a company may be indirectly impacted by all ESG-related activities (Tarmuji et al., 2016). Adopting innovative environmental practices, such as minimizing pollution sources and operating in a more environmentally friendly manner, can lower trash disposal costs and fines, which will have a positive economic impact on the business (Tarmuji et al., 2016).

In terms of the social component, adopting social practices is characterized as a strategy that places an emphasis on a company's accountability to a variety of stakeholders, including its workers and the broader community, in addition to its usual accountability to financial shareholders. As a result, businesses with strong social performance have an easier time luring in talented candidates and gaining the public's trust (Tarmuji et al., 2016). One of these effects can improve a company's reputation, giving it a competitive edge in establishing trust and preserving enduring bonds with clients and investors. A positive reputation can boost a company's worth, enhance its market share, and draw ESG-conscious investors. These factors can all lead to more productive staff and devoted customers, which can raise sales.

When it comes to the governance structure, a strong company is crucial to maximizing business performance for the benefit of shareholders, controlling agency expenses, and ensuring company survival (Tarmuji et al., 2016). According to Haniffa and Hudaib (2006), corporate governance is defined as the processes and frameworks used to plan, direct, and manage business and organizational endeavors in order to promote business growth and corporate responsibility. This is done with the specific aim of recognizing long-term shareholder value while taking into account the interests of other stakeholders. According to Haniffa and Hudaib (2006), corporate governance plays a crucial role in the organization's execution by assisting the board in managing the business operations of the corporation. In order to oversee how the company is run and conduct business, one of the most crucial components of corporate governance procedures is the board of directors (Lagasio & Cucari, 2019). Competitive and fair management competitive and fair remuneration to recruit and retain executives and board members of the board of directors and commissioners are related to the best practices of best corporate governance. In order to ensure sustainability and advance, corporations will be encouraged by good governance to adhere to policies and frameworks (Koutoupis et al., 2021).

The goal of this study is to ascertain whether ESG operations and activities, as measured by ESG value, have an impact on financial performance and can raise or lower the corporate financial value of environmentally sensitive businesses operating in emerging economies. In the ESG literature, there have also been numerous research on the value-enhancing potential of ESG performance in established markets; however, there have been relatively few studies that concentrate on emerging markets. For businesses operating in developed market economies and emerging market economies, the reasons for investing in ESG operations are essentially the same. The researcher observed from the literature that is currently accessible that ESG values in developing markets tend not to have a major impact on business performance; this may be because excellent ESG practices are not widely adopted in emerging market nations. In this study, we want to reevaluate the possibility that the ESG performance of environmentally sensitive businesses in developing markets can impact company profitability. As a result, we propose the following hypothesis:

- **H1A:** During non-crisis times, the operating performance of environmentally sensitive businesses (ROA) in emerging market nations is influenced by ESG Score.
- **H1B:** During non-crisis times, the financial performance (ROE) of environmentally sensitive enterprises in developing market nations is influenced by ESG Score.
- **H1C:** Environmentally sensitive firms in developing market nations have a positive impact on firm value (Tobin's Q) during non-crisis times.

Implementing effective ESG practices and activities is necessary for achieving a high ESG score. Positive ESG is anticipated to improve and increase the company's sustainability. Threats from both the inside and the outside, especially global problems, cannot be separated from this. The Covid-19 epidemic, which the globe is currently dealing with in 2019, has an impact on business performance and places companies in a challenging scenario with growing uncertainty.

Studies were done to assess the effect of the Covid-19 epidemic on business financial performance and the moderating function of environmental, social, and governance (ESG) performance in this relationship (Al Amosh & Khatib, 2023; Broadstock et al., 2021). Several statistical analyses, including descriptive statistics, correlation matrices, fixed-effects regression, and robust regression using GMM models, were conducted based on a sizable international panel dataset covering nine G20 countries that was retrieved from the Thomson Reuters Refinitiv Eikon database for the period of 2016 to 2021. According to the research, the pandemic has a large negative impact on financial performance, but this effect is mitigated by ESG performance. Therefore, businesses that engage in ESG initiatives are less impacted by the pandemic.

The efforts of company directors to maintain ESG performance as one of the effective measures during the crisis to limit the impact of Covid-19 on financial performance are improved by meeting stakeholder requests. This study demonstrates how adherence to ESG issues can reduce detrimental financial effects during the crisis. Although implementing ESG practices is expensive, it pleases stakeholders and produces financial benefits for the company.Theoretically, we try to research through stakeholder and crisis theories to understand events.In this study, we will investigate if the environmental, social, and governance (ESG) performance of environmentally sensitive businesses in developing markets can influence business performance during the Covid-19 Pandemic crisis. As a result, we propose the following hypothesis:

- **H2A:** During the Covid-19 pandemic crisis, environmental sensitive enterprises' operating performance (ROA) in emerging market nations was influenced by ESG Score.
- **H2B:** During the Covid-19 pandemic crisis, the financial performance of environmentally sensitive businesses (ROE) in developing market nations is influenced by the ESG Score.
- **H2C:** During the Covid-19 pandemic crisis, environmental sensitivity has a bearing on company value (Tobin's Q) in emerging market countries.

3. RESEARCH METHOD

Using ESG performance scores given by Refinitiv Eikon, this study explores the connection between ESG and financial success of environmentally concerned firms. Using publicly available data (such as annual reports, corporate websites, stock market filings, news, non-governmental organization websites, and corporate social responsibility [CSR] reports from reputable corporations), Refinitiv Eikon's ESG ratings assess a company's ESG operations and performance. The Refinitiv Eikon ESG Assessment (formerly known as Thomson Reuters Eikon) evaluates and rates the social and environmental performance of businesses using 186 sector- and industry-specific key indicators and information. Refinitiv Eikon offers a wide range of financial data and statistics for businesses worldwide in addition to ESG data and information. We gathered financial information for this study from Refinitiv Eikon and Refinitiv DataStream. The relationship between ESG and financial performance will be assessed using market-based performance and accounting-based indicators due to the complexity involved. The annual reports and/or sustainability reports of each environmentally sensitive company, which can be accessible through the Thomson Reuters Refinitiv Eikon database, serve as the secondary data.

The sample for this study has been determined to be businesses that use large amounts of natural resources in their production processes and negatively affect ecological sustainability. Based on their manufacturing and operational activities, which are also known for having an impact on environmental and socioeconomic sustainability, the companies in this sample provide ESG data from six environmentally sensitive industries (Garcia et al., 2017). First, we took data from the Refinitiv database and extracted information for 4048 companies in the developing markets country region. Then, using the TRBC and GICS definitions and companies with ESG ratings ranging from at least 2016 to 2021, we picked out those that fit into the category of environmentally sensitive companies. The total number of businesses assessed was whittled down to 704 businesses based on this criteria. Table 2 below provides information on the research sample in more detail.

Tabel 2: Total Observation

Criteria	Total Company	Total Observation
Environmentally Sensitive Companies Listed in 16 emerging market countries and have an ESG Score in 2021	4048	24.288
Environmentally Sensitive Companies Listed in 16 emerging market countries and have an ESG Score in 2016-2021	820	4.920
Companies with incomplete data were excluded from the study.	(116)	(696)
Final total research sample	704	4.224

This sample includes ESG data from companies in environmentally sensitive industries based on their manufacturing and operational activities, which are also known for their influence on environmental and socioeconomic sustainability (Garcia et al., 2017). First, we extracted ESG and financial performance data of 4048 companies in the emerging markets country area from the Refinitiv database. After that, we sorted out companies that fall into the environmentally sensitive category based on the definition of TRBC and GICS and have ESG scores from at least 2016-2021. Based on this selection, the total number of companies reviewed was reduced to 704 companies. The researcher defined emerging market countries based on several relevant sources such as IMF, MSCI, FTSE, Dow Jones and Cornell University data. Based on these criteria the group for the sample population includes Brazil, China, Chile, Greece, India, Indonesia, South Korea, Malaysia, Mexico, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, Turkey.

Table 3: Research Population Based on Company Classification

GICS Industry Group Name	Jumlah Perusahaan
Automobiles & Components	30
Capital Goods	105
Commercial & Professional Services	3
Consumer Discretionary Distribution & Retail	17
Consumer Durables & Apparel	26
Consumer Services	15
Consumer Staples Distribution & Retail	20
Energy	56
Financial Services	4
Food, Beverage & Tobacco	56
Health Care Equipment & Services	12

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Household & Personal Products	9
Materials	121
Pharmaceuticals, Biotechnology & Life Sciences	27
Real Estate Management & Development	35
Semiconductors & Semiconductor Equipment	21
Technology Hardware & Equipment	46
Transportation	44
Utilities	56

We assess and track the relationship between a company's sustainable and socially responsible operations and its financial performance using the ESG performance data of corporations from 2016 to 2021. To quantify the precise influence of ESG performance on corporate financial performance and to address endogeneity issues, we utilize a 1-year lag for financial performance data, similar to earlier studies (Atan et al., 2018; Manrique & Martí-Ballester, 2017; Naeem et al., 2022; Velte, 2017). We can better examine the effects of ESG operations and environmentally sensitive business performance on corporate finance by incorporating a 1-year lag for financial performance data. So, from 2017 to 2022, we obtained financial information for each environmentally sensitive company from the Refinitiv database.

The researcher used a regression analysis to examine the connection between company financial performance metrics and ESG performance scores. In order to see how the ESG value impacts the dependent variable, the researcher employed it as both an independent and a control variable in the regression. The following is a succinct explanation of the variables:

- ESG Score: Based on Refinitiv's most recent ESG score calculation methodology, the Refinitiv Eikon total ESG score (100%) is determined using a weighted average of 34%, 42%, and 24% for environmental, social, and governance performance. The Refinitiv Eikon (aggregate) ESG score is used in this study to display the company's overall ESG performance among environmentally sensitive businesses.
- Firm Size: In addition to ROA, ROE, and TobinsQ, firm size can impact ESG score. In order to handle ESG projects and produce higher ROA, ROE, and TobinsQ, large firms may have more resources available. The ability to understand the impact of ESG score on ROA, ROE, and TobinsQ without the interference of size variables is made possible in this study by controlling for company size.
- Financial Leverage: The debt-to-equity ratio, or financial leverage, of a corporation can have an impact on ROE and TobinsQ. Understanding the impact of ESG score on ROE and TobinsQ without the interference of leverage variables that could affect the return on equity is made easier by accounting for the financial leverage component.
- Country: Each developing market nation has different ESG issues and elements that influence ROA, ROE, and TobinsQ. Considering the disparities in emerging market countries, particularly in this case in the form of GDP per capita of each country, is crucial to understanding the impact of ESG score on ROA, ROE, and TobinsQ.

Table 4 provides a detailed explanation of the research variables.

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Table 4: Variable Measurement

Variable	Description	Source
	Dependent Variable	
ROA	Return on assets or return on assets calculated from net income divided by the average total assets in one fiscal year.	Company annual reports for the period 2017-2022 obtained through the Refinitiv Eikon database
	$\frac{Net\ Income}{Total\ Asset}$	
ROE	Return on Equity is a metric to compare the amount of net income (net income) of the company and the total amount of investor / owner capital in it $\frac{Net\ Income}{Total\ Equity}$	Company annual reports for the period 2017-2022 obtained through the Refinitiv Eikon database
Tobin's Q	The ratio of the book value of total assets divided by the total of the market value of the outstanding shares at the conclusion of the reporting period $\frac{Market\ Value\ of\ Corporation}{Total\ Asset}$	Company annual reports for the period 2017-2022 obtained through the Refinitiv Eikon database
	Independent Variable	
ESG Score	ESG score of the company calculated by Refinitiv Eikon ESG database.	ESG combined score database Refinitiv Eikon period 2016-2021
	Control Variable	
Firm-Specific Control		
Financial Leverage	Debt / Total Asset Ratio	Company annual reports for the period 2017-2022 obtained through the Refinitiv Eikon database
Firm Size	Ln Total Asset	Company annual reports for the period 2017-2022 obtained through the Refinitiv Eikon database
Contry-Specific Control		
GDP Per Capita	Ln GDP per Capita report	World Bank Database

The researcher created and applied 6 regression models to assess any potential links between the ESG performance of environmentally sensitive businesses and corporate performance and to further explore the research hypotheses. To assess the impact of corporate sustainability and corporate social responsibility on the financial performance of environmentally sensitive enterprises, we compare the financial performance of firm i at time t and g country with their ESG performance at time time t - 1 . The regression model is presented by researchers as follows.

$$ROA_{igt}\,(2017-2020) = \beta_0 + \beta_1 ESGScore_{igt-1} + \beta_2 FS_{igt} + \beta_3 GDP_{igt} + \varepsilon_{igt} \quad (1.1)$$

$$ROE_{igt}\,(2017-2020) = \beta_0 + \beta_1 ESGScore_{igt-1} + \beta_2 FS_{igt} + \beta_3 FL_{igt} + \beta_4 GDP_{igt} + \varepsilon_{igt} \quad (1.2)$$

$$TobinsQ_{igt}\,(2017-2020) = \beta_0 + \beta_1 ESGScore_{igt-1} + \beta_2 FS_{igt} + \beta_3 FL_{igt} + \beta_4 GDP_{igt} + \varepsilon_{igt} \quad (1.3)$$

$$ROA_{igt}\,(2021-2022) = \beta_0 + \beta_1 ESGScore_{igt-1} + \beta_2 FS_{igt} + \beta_3 GDP_{igt} + \varepsilon_{igt} \quad (2.1)$$

$$ROE_{igt}\,(2021-2022) = \beta_0 + \beta_1 ESGScore_{igt-1} + \beta_2 FS_{igt} + \beta_3 FL_{igt} + \beta_4 GDP_{igt} + \varepsilon_{igt} \quad (2.2)$$

$$TobinsQ_{igt}\,(2017-2020) = \beta_0 + \beta_1 ESGScore_{igt-1} + \beta_2 FS_{igt} + \beta_3 FL_{igt} + \beta_4 GDP_{igt} + \varepsilon_{igt} \quad (2.3)$$

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To test the research hypothesis, the analysis was conducted using panel regression analysis method with Eviews 10 statistical tool. In addition, a regression model selection test was conducted using the Chow and Hausman tests. The period for models 1.1 -1.3 will use samples from 2016 to 2019 to see the effect of variables during the pre-crisis period, while for models 2.1 - 2.2 will use samples from 2020-2021 to see the effect between variables during the crisis period.

4. RESULTS AND DISCUSSION

As shown in Table 3, the maximum ESG score is 94.32, while the minimum is only 2.06. The table provides more details. Over time, the disclosure values for E, S, and G have increased. Over the years, the sort of information that has been disclosed the most and the least is governance information. It is evident that several businesses still have an EVN score of 0 in the years 2018–2020. The average ROA score for corporate performance is the lowest year over year in the same table, while TQ is at its greatest. With a minimum score of -89% and a high score of 107%, the average ROA score is 5%. 52.17 is the average ESG score. Class C represents this score. Class 'C' denotes a moderate level of transparency in disclosing material ESG data to the public and a generally satisfactory ESG performance (Refinitiv, 2021). The highest ESG rating is 94.32. The grade for this test is A. Class 'A' denotes reasonably strong ESG performance and high levels of transparency in disclosing significant ESG information to the public. The ESG cutoff is 2.06 points. This result is a D grade. A grade of "D" denotes generally subpar ESG performance and insufficient ESG data reporting openness.

Table 5: Descriptive Statistic

	Mean	*Median*	*Minimum*	*Maximum*	*Count*	*Standard Error*	*Standard Deviation*	*Kurtosis*	*Skewness*
ESG Score	*52,17*	*54,57*	*2,06*	*94,32*	4224	*31%*	*19,82*	*- 0,48*	*- 0,37*
EVN Score	50,24	53,27	0,00	99,23	4224	38%	24,87	- 0,75	- 0,31
SOC Score	52,94	55,04	0,33	97,74	4224	37%	24,17	-0,78	- 0,32
GOV Score	52,91	54,85	0,70	98,22	4224	34%	22,10	- 0,94	-0,21
ROA	5%	4%	-89%	107%	4224	0,1%	8%	17,96	- 0,05
ROE	12%	11%	-291%	581%	4224	0,4%	28%	81,94	2,84
Tobins Q	1,69	1,15	0,06	39,91	4224	3%	1,98	86,93	7,52
FinLev	1,89	1,32	-52,07	114,29	4224	5%	3,44	320,88	9,33
Firm Size	22,49	22,47	17,73	26,70	4224	2%	1,39	0,34	0,11
Ln GDP	9,24	9,21	7,45	10,46	4224	1%	0,82	- 0,44	- 0,37

Source: processed by the author

The regression test results of the six equation models are shown in Tables 6 - 7. The selected model has passed the Chou Test and Hausman Test to determine which model is the best. Table 6 shows that the independent and control variables simultaneously affect the dependent variable. This applies to models 1.1, 1.2 and 1.3.

Tabel 6: Regression Result Model 1 (Sample 2017-2020)

Regression Results

Model & Dependent Variable	Model 1.1 (ROA)		Model 1.2 (ROE)		Model 1.3 (TobinsQ)	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
ESG Score	-8,87E-05	0,5897	0,0005	0,560	- 0,0009	0,6697
Fin Lev			-0,040	0,000	0,0014	0,8232
FS_LN TA	0,050	0,000***	0,078	0,011***	-0,3541	0,000***
LN GDP	-0,051	0,031**	-0,158	0,165	0,2663	0,4019
Constant	-0,611	0,013***	-0,147	0,901	6,879	0,036
No. of Obs	2816		2816		2816	
R-squared	0,717		0,534		0,923	
Prob (F-statistic)	0,000		0,000		0,000	
Cross Section fixed, Period fixed						
***p < 0,01; **p < 0,05; *p < 0,1						

Source: processed by the author

The regression models for the three models can be regarded to be significant based on the probability value of 0.0000 that the results of this study's analysis of regression yielded. The dependent variable in the ROA, ROE, and Tobin's Q models is not significantly impacted by ESG Score. The dependent variables ROA, ROE, and Tobin's Q, on the other hand, have a substantial relationship with the control variable.

Tabel 7: Regression Result Model 2 (Sample 2021-2022)

Regression Results

Model & Dependent Variable	Model 2.1 (ROA)		Model 2.2 (ROE)		Model 2.3 (TobinsQ)	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
ESG Score	0,000	0,609	-0,001	0,357	0,000	0,986
Fin Lev			-0,033	0,000***	-0,002	0,817
FS_LN TA	0,078	0,000***	0,105	0,106	-0,585	0,021***
LN GDP	0,091	0,135	0,113	0,597	-2,102	0,012***
Constant	-2,547	0,001***	-3,140	0,237	34,399	0,001
No, of Obs	1408		1408		1408	
R-squared	0,825		0,765		0,931	
Prob (F-statistic)	0,000		0,000		0,000	

Model 2,1 menggunakan fixed model sedangkan Model 2,2 dan 2,2 menggunakan random model
***p < 0,01; **p < 0,05; *p < 0,1

Source: processed by the author

Regression analysis performed for this study's data yielded a probability value of 0.0000, as shown in Table 7, indicating that the regression models for the three models are significant. The ESG Score has no link with the dependent variable in the ROA, ROE, and TobinsQ models, just like before the crisis. The dependent variables ROA, ROE, and TobinsQ have a substantial relationship with the control variables.

ESG scores, which represent overall ESG performance, did not significantly correlate with ROA, ROE, or Tobin's Q in the pre-Covid-19 pandemic crisis period for environmentally sensitive businesses in developing markets nations, according to the overall regression results (Table 6). Because accounting financial performance measurements like ROA typically cover a wider variety of corporate activities than ESG operations in the organization, the ESG value of these companies may not be sufficient to have an impact on ROA (Huang, 2021). Similar to this, there is no discernible correlation between ESG performance and either financial performance or business value. According to study (Ahmed & Hasan, 2012; Junius et al., 2020), even while corporations publish their sustainable development initiatives, this has no effect on their asset management revenue. When compared to industrialized nations, ESG principles may still be comparatively underutilized in developing market nations. The long-term significance of environmental, social, and good governance issues in ensuring sustainable financial success may not be fully understood by businesses in such nations. ESG practices may have less of an impact on ROA, ROE, and firm value if they are not implemented effectively (Disli et al., 2022). Additionally, enterprises may encounter more urgent financial issues in developing market nations, such as growth, liquidity, and capital availability. Companies often disregard ESG elements that have a longer-term influence in these circumstances and instead prioritize quick financial issues that can have an immediate impact on ROA, ROE, and the value of the company (Sherwood & Pollard, 2018).

ESG score currently plays no impact in ROA, ROE, and firm value due to additional considerations like regulation, business environment support, as well as economic and industry factors. The corporate and regulatory environments in emerging market nations might not yet be favorable for the growth of robust ESG practices. Firms may not have enough incentives to engage in ESG practices if legislation and incentives do not encourage or mandate that they consider ESG factors in operations (N. Naeem et al., 2022). Other industry considerations, including as commodity pricing, currency changes, political stability, or a lack of infrastructure, may have a higher impact on a firm's ROA and ROE in some industries than ESG Scores.

This can be attributed to the public's perception that sustainable development would not bring value to the business and does not affect how they choose to buy goods and services. The probability value for the hypothesis test in this ROA, ROE, and Tobin's Q (2017–2020) sample research model was higher than the 0.05 significance level. This demonstrates that, prior to the crisis, ESG disclosure had little to no impact on the company's operational performance. H1A, H1B, and H1C in this study are therefore disregarded.

Although businesses attempt to enhance their ESG performance and practices to guard against the impact and unpredictability caused by Covid-19 (Savio et al., 2023), the total ESG performance value also has no meaningful link with ROA, ROE, and firm value during the Covid-19 pandemic. It has no discernible impact on raising operational or financial performance in environmentally sensitive businesses in developing markets. This shows that efforts made by developing market companies regarding ESG standards do not benefit or have any impact on operational performance and financial performance both before and during crucial times in emerging market countries.

This test result can be explained in part by the importance of crisis management and company continuity. Many environmentally sensitive businesses in emerging market nations may experience severe difficulties keeping their operations operational during the pandemic crisis (M. A. Naeem et al., 2023). In the short term, operational and financial factors including liquidity, cost containment, and meeting financial obligations may take precedence over ROA, ROE, and Tobin's Q. ESG factors become less important in this case. Then, as a result of the Covid-19 pandemic issue, businesses must concentrate on defending their operations, including looking after their staff, preserving their supply chains, and controlling operational risks. Companies may not devote enough time or resources to implementing or strengthening ESG factors in order to deal with crises, which could have an impact on the factors' ability to influence ROA, ROE, and Tobin's Q.

Another contributing factor is economic and financial market instability. The Covid-19 pandemic crisis has caused economic and financial market instability in emerging market countries. Under such conditions, external factors such as currency fluctuations, decreased

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demand, decreased investment, and business uncertainty can have a more significant influence on a company's financial performance than ESG factors. Companies may focus more on adjusting their strategies to address the immediate impact of the crisis and respond to market changes (Adams & Abhayawansa, 2022). Finally, there is a lack of awareness and preparedness. Awareness of the importance of ESG factors and companies' readiness to adopt ESG practices may still be low in some emerging market countries. Companies may not fully understand the long-term benefits of ESG practices and may not be prepared for the challenges and changes caused by the Covid-19 pandemic (Gregory, 2022). This lack of awareness and readiness may reduce the influence of ESG score on ROA, ROE, and Tobin's Q.

The probability value for the hypothesis test in this ROA, ROE, and TobinsQ sample study model (2020–2021) was greater than the 0.05 significance threshold. This demonstrates that during times of crisis, the ESG score has no bearing on operational success, financial performance, and firm value. H2A, H2B, and H2C are therefore disregarded in this study.

5. CONCLUSIONS, IMPLICATIONS, SUGGESTIONS AND LIMITATIONS OF THE RESEARCH

5.1 Concluson

The performance of environmentally sensitive industries in emerging markets is examined in this study in respect to ESG values. Prior to and during the Covid-19 pandemic issue, we looked at the ESG performance of ecologically conscious businesses. Our research demonstrates that during and prior to the Covid-19 pandemic problem, ROA, ROE, and Tobin's Q have no link with the overall ESG performance of environmentally sensitive enterprises. This result differs slightly from stakeholder theory from a theoretical standpoint.

The lack of a positive relationship between ESG scores and firm performance of environmentally sensitive industries in emerging market nations suggests that even though such practices can help maintain environmental and social sustainability, investing in and expanding ESG operations and activities may not yet have an impact on financial returns. Companies may engage in ESG operations and activities for a variety of reasons, including those supported by other theoretical viewpoints like legitimacy theory. According to the legitimacy theory, businesses develop and implement ESG initiatives to abide by government ESG rules, please external stakeholders, and prove their legitimacy in the community. Businesses operating in emerging market nations must comply with various rules and regulations, and there are differences in the economic and sociopolitical climates of these nations.

Returning to the research findings, ESG value in developing market enterprises does not significantly correlate with company performance measures prior to and after the Covid-19 pandemic issue. It's possible that companies operating in emerging market nations derive ESG value from engaging in ESG activities to uphold legal obligations and social contracts, which have little bearing on profitability or market valuation. This could account for the relationship between the two being generally insignificant. Additionally, stakeholders' and investors' lack of trust in companies' ESG policies and operations in developing market nations may be contributing to this, which could have a favorable impact on their profitability and stock price.

5.2 Implication

By examining the perspective during and before the Covid-19 pandemic crisis, the study's findings help us better understand the influence of ESG performance on financial firm performance, particularly for environmentally sensitive enterprises in emerging regions. The results of this study will be useful to scholars looking into how different regionally based or multinational ESG companies' financial success relates to businesses in other industries. The findings of this study significantly advance the field of theory surrounding the financial worth of ESG performance and the relationship between ESG and performance of environmentally sensitive companies in emerging markets. The financial impact of ESG performance in environmentally sensitive emerging economies is still negligible and unclear, indicating that ESG strategies and efforts in these nations require greater attention. International investors and governments will benefit from this study's insights into the effects of environmental sustainability performance across different economic regions as they make critical investment decisions. As ESG performance can maximize profitability and market value, this study also aims to persuade management of environmentally sensitive firms to implement more efficient and effective ESG policies and initiatives.

Another implication is that the Covid-19 epidemic may have a less significant overall impact than previously thought on ROA, ROE, and Tobin's Q. ESG considerations may lose priority as a result of crises like the pandemic, forcing businesses to concentrate on critical operational and financial issues.

5.3 Limitiation

There are several limitations that need to be considered in research on the effect of ESG score on ROA, ROE, and Tobin's Q in environmentally sensitive companies in emerging market countries, both before and during the Covid-19 pandemic. The following are some of the limitations that may arise:

- Data Restrictions: Research frequently faces data restrictions. The lack of regular and comprehensive ESG score data for businesses in developing market nations may be one of the data limitations in this situation. Sometimes, the amount of ESG data is restricted to big businesses or doesn't cover every industry area.
- ESG score measurement method limitations: Different institutions and data sources utilize different measuring techniques and ESG scores. As a result, businesses and developing market nations may view and compare things differently. The accuracy and consistency of the research findings may be impacted by the employment of various methodologies.
- Cross-year effects: Studies that use data collected over a long period of time, like as comparisons between the Covid-19 pandemic and other outbreaks, may be impacted by cross-year factors that are difficult to fully account for. A company's financial success may also be impacted by changes in market, regulatory, and economic situations that take place independently of the ESG score.
- Additional variables influencing financial performance: A variety of variables, including external variables like market competition, governmental regulations, and economic conditions, can impact a company's financial performance. Internal variables including management, business strategy, and the state of the company's finances can also have a big impact. By focusing only on the ESG score's significance, these other elements may go unnoticed.

5.4 Suggestion

Future research should compare the ROA, ROE, and Tobin's Q of companies with excellent ESG procedures and those without them in order to identify which companies are more sustainable. This kind of study can shed light on the long-term advantages of sound ESG procedures.

Examining how the COVID-19 pandemic has affected how companies' ROA, ROE, and Tobin's Q scores are affected by ESG factors. Such studies can pinpoint the variables that affected the ESG score's influence during the crisis.

During the pandemic, conduct research on the connection between corporate resilience levels and ESG scores. This can clarify how ESG works to support businesses as they navigate the crisis and sustain strong financial performance.

Examine how laws and policies affecting ESG practices and company financial performance affected emerging market nations during the COVID-19 epidemic. Such study can shed light on how the government can promote better ESG practices and how that might affect ROA, ROE, and Tobin's Q.

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