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ESG and firm performance: The role of digitalization

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Abstract

Research aims: This research aims to examine the impact of social, environmental, and governance (ESG) responsibilities on firm performance – books and markets. It also analyzes the role of digitalization in the relationship between ESG and firm performance.

Design/Methodology/Approach: The population in this study was all companies listed on the Indonesian Stock Exchange in 2017-2021. The sampling technique used purposive sampling with a total sample of 347 firm-years. Testing hypotheses moderated regression analysis and subgroup analysis.

Research findings: Empirical findings demonstrated that ESG responsibilities could improve company performance, both book performance and market performance. On the contrary, digitization could not boost the company's performance. Moreover, digitalization was unable to moderate the relationship between the two. However, when the samples were separated based on digitization variables, the results revealed that ESG had a positive impact on performance only in companies that adopted digital technology.

Theoretical contribution/Originality: In addition to enriching literature related to agency and stakeholder theory, this research reinforces empirical evidence of the role of ESG in increasing the value of the company. The results also highlight digital adoption to support environmentally and socially responsible activities. Nevertheless, the impact of digitization on company performance has not been proven. This research contributes to the literature about ESG and digitalization that imply corporate value creation.

Practitioner/Policy implication: This research contributes to corporate management to enhance social and environmental responsibility, as well as prompt adoption of digital technology.

Research limitation/Implication: This research has some limitations. First, the sample was limited because not all companies in Indonesia had ESG scores in Bloomberg. Second, the measurement of digitalization on the sub-sample only used a dummy and did not differentiate the type of digitization that the company adopted.

Keywords: ESG; Digitalization; Book Performance; Market Performance; Firm Value

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Introduction

The impact of environmental, social, and governance (ESG) responsibilities on corporate performance and value has long been debated (Masulis & Reza, 2015; Albuquerque et al., 2019; A Fatemi et al., 2015). In Indonesia, ESG development has been a growing focus in recent years. The Indonesian government has begun to promote ESG through a number of regulations and policies. For example, Financial Services Authority

Regulation No. 51 /POJK.03/2017 on sustainable finance guidelines to encourage banks and financial institutions to include ESG considerations in their policies. According to the survey PWC (2023), more and more investors are applying for a good living ESG to manage risk and identify value creation opportunities.

Neoclassical theory points out the negative relationship between ESG and financial performance (Wright & Ferris, 1997). Maximizing the owner's profits is the company's sole social responsibility. The owner assumes that the results of ESG activities cannot cover the costs incurred. Earlier empirical results uncovered that companies that earned green awards or revealed a commitment to natural sustainability had abnormal negative returns (Kim & Lyon, 2015; Lyon et al., 2013). The evidence indicates that investors are punishing companies for what they consider to be expensive investments. In a study, Landi and Sciarelli (2018) exhibited a negative correlation between their ESG scores and financial performance. Meanwhile, Folger-Laronde et al. (2022) analyzed the relationship between ESG ratings and financial returns during COVID-19 in Canada. They concluded that good ESG performance could not hold back or provide protection during severe market declines. Moreover, several multi-country studies reported negative links. Duque-Grisales and Aguilera-Caracuel (2021) surveyed 104 multinational companies in Latin America from 2011 to 2015. Their findings showed a negative relationship between ESG scores and the financial performance of the companies. Garcia and Orsato (2020) compared developing and developed countries through 2165 companies from 2007 to 2014. They revealed that in developing country markets, the relationship between ESG scores and financial performance is negative.

Other perspectives suggest that socially responsible behavior positively impacts firm performance and value (Fatemi et al., 2018; Malik, 2015). In the framework of stakeholder theory, it is said that ESG better satisfies the interests of non-ownership stakeholders, including employees, customers, and regulators. ESG also enables more efficient contracts (Jones, 1995), boosting growth while reducing corporate risk (Fatemi et al., 2015). There are two streams of explanation for ESG operations that add value to businesses. First, ESG can create value by increasing the wealth of shareholders. Increased cash flows can achieve this type of value creation; for example, customers want to buy from companies with a good corporate responsibility reputation, and employees are more productive when working for the company. The other way is to lower the discount rate, which will affect the cost of capital (Mahmut et al., 2022). Second, ESG can create corporate value by maximizing shareholder utility. For instance, shareholders can appreciate products produced by companies with a high ESG profile and the cash flows they generate. Shareholders receive more utility by having a responsible company, even if the cash flow is the same as an irresponsible company (Landi & Sciarelli, 2018).

Nevertheless, several other studies provide inconsistent results. Atan et al. (2018) assessed how ESG scores affected Malaysia's profitability, company value, and capital costs. The statistical results displayed no evidence of a correlation with the company's value or profitability. Giannopoulos et al. (2022) analyzed the role of ESG scores in the financial performance of companies listed in Norway from 2010 to 2019. The study

exposed varied results, showing a positive relationship between ESG scores and the company's value (Tobin's Q) and a negative relationship between the ESG score and profitability (ROA). Behl et al. (2022) explored the relationship between ESG reporting and the value of Indian energy sector companies and found inconsistent results. In their multi-country study, Lopez-de-Silanes et al. (2020) investigated the relationship between ESG reporting and quality and discovered that ESG scores did not impact company financial performance.

When analyzing the relationship between ESG and financial performance, McWilliams and Siegel (2001) stated that it is crucial to consider more complex possibilities. A company that succeeds in distinguishing itself will usually reach a return rate above average. Differentiation involves setting companies as different companies in a positive way. However, competition—every company works to build its reputation—makes it harder for any company to distinguish itself as a company with a high ESG rate. Accordingly, this research added aspects of digitalization in analyzing the relationship between ESG and company performance.

The organization's benefits from the digital economy are growing, as are its connections to all facets of management and operations. The Internet era's high-speed information flow has increased the quantity and caliber of market information disclosure, lowered the speculative profit exposure imposed by information asymmetry, and forced managers to concentrate on maximizing business value. Consequently, internal corporate governance becomes more effective (Zhang & Li, 2021). In terms of increasing social responsibility, the information effect of digital transformation also drives companies to fulfill their social obligations truly (Xiao et al., 2021).

Digitalization in business organizations refers to applying digital technologies to build new business models that improve value. In addition to positives (Brenner, 2018), digitalization poses risks and challenges (Scholz, 2017; Sebastian et al., 2020). For instance, information about service offers and a potential collection of consumer information may arouse doubt and distrust among stakeholders, endangering the company's financial success (Forcadell et al., 2020). One way for companies to tackle this problem is by building a solid reputation for corporate sustainability. Corporate sustainability refers to social and environmental concerns in business operations and stakeholder interactions. Thus, ESG and digitalization can be an effective means of building stakeholder trust.

Serving as its novelty, this research used digitization moderation variables to explore ESG interrelationships and corporate performance. First, it analyzes the relationship between ESG and company performance and value to help clarify the correlation. Second, it contributes to a deeper understanding of the relationship between digitization and company performance by providing and empirically showing reasons for the diverse findings of previous research. Although research on digitization and company performance is increasing in developed countries, there has yet to be a consensus on whether market digitization has a positive or negative relationship with company performance in developing countries. Third, this study empirically investigates

the impact of digitalization and whether it will strengthen or weaken the influence of ESG on company performance. Additional testing was carried out by separating the samples into two groups. Based on empirical results, this research makes two main contributions. First, ESG activities can consistently increase company value in developing countries. Second, only businesses that recently began to adopt digital technology can reap the rewards of ESG activities, specifically in the form of rising firm value. Further, this research enriches instrumental stakeholder theory. ESG supported by digital technology can boost company value due to information openness in the market, suppressing speculative actions caused by information asymmetry. In practice, these findings denote that digital transformation in the company's value chain needs to be further optimized and integrated to achieve social responsibility values and improve company performance.

Literature Review and Hypotheses Development

Environmental Social Governance (ESG)

The development of sustainability and ESG issues changed dramatically since the advent of stakeholder theory (Velte, 2017). The theory highlights that shareholders are not the only stakeholders to pay attention to; other stakeholders include employees, customers, communities, and others. When a business strives to prioritize serving its shareholders, other stakeholders will likely impact how well it succeeds. According to the instrumental stakeholder theory, businesses are vehicles for generating wealth, with social and environmental responsibility seen as a tactical means of advancing economic objectives (Garriga & Melé, 2004). On the other hand, the theory of normative interests discusses moral duties emphasizing moral standards that improve the bond between business and society. Public corporations have adopted ESG disclosures more frequently in recent years as they try to involve stakeholders, meet investor demands, establish credibility, and respond to crises and competition in their industries (Olsen et al., 2021). Sustainability implementation is a dynamic and nuanced process over time. Some businesses exploit it to create a competitive edge, while others view it as a standard operation (Ioannou & Serafeim, 2019). Companies worldwide willingly engage in more ESG practices, indicating that they might benefit financially (Eriandani & Winarno, 2021; Yoon et al., 2018).

Environmental Social Governance (ESG) and Firm Performance

Zhao et al. (2018) analyzed listed Chinese energy companies and found that higher ESG performance could affect their improved financial performance. Dalal and Thaker (2019) surveyed 65 Indian enterprises and uncovered that ESG scores favorably impacted financial success. Xie et al. (2019) discovered a favorable correlation between ESG initiation activities and financial performance, employing data from worldwide. Bhaskaran et al. (2020) reviewed the impact of ESG on the financial performance of 4887 companies from 2014 to 2018 using corporate value (Tobin's Q) and operational performance (ROE and ROA) as dependent variables. According to empirical findings,

businesses that perform well in governance, social responsibility, and the environment are seen as having higher value by investors. De Lucia et al. (2020) discovered an essential correlation between ESG factors and financial performance (ROE and ROA) after studying a sample of 1038 public enterprises from 22 European nations between 2018 and 2019. Naeem et al. (2021) studied the effect of ESG performance on financial performance using 1042 enterprises from developing nations between 2010 and 2019. They documented that individual and aggregate ESG scores had a positive and significant relationship with the company's value (Tobin's Q) and profitability (ROA). Chairani and Siregar (2021) researched companies registered in ASEAN (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) from 2014 to 2018. The findings revealed that ESG increased the impact of corporate risk management on the company's value. Risk management had a positive relationship with the company's value and profitability. Dkhili (2023) also proved that ESG could increase Tobin's Q.

***H_1**: ESG has a positive impact on firm performance.*

Digitalization and Firm Performance

Digital technologies, which combine information technology, computing, communication, and connection, can be employed in business to gain a long-term competitive advantage essential for surviving in a cutthroat market. Rising corporate digitization can benefit enterprises even more through cost savings, better connectivity, greater flexibility, and adaptation in a more complex and competitive environment. Digitalization improves cost efficiency and enables process improvement that generates value for customers (Drnevich & Croson, 2013). According to Gunasekaran et al. (2002), digital technology can enhance the promotion of interactive products and services with customers, creating new distribution channels for existing products. In addition to enabling two-way communication, reducing the cost of delivering information to customers, speeding up the supply of digital goods and services, and reducing administrative burden, customers can easily find detailed information online. Listed companies are expected to play a relevant role in digitalization, and empirical evidence suggests that stock market players are integrating digital knowledge into their business processes (Ricci et al., 2020).

Furthermore, focusing on samples of companies listed in Italy revealed a significant link between digitization and stock value, as investor decision-making and company valuation processes are influenced by information related to digitization, which is considered a form of intellectual capital. Salvi et al. (2021) analyzed an international scope and found that information about digitization positively impacted the value of companies. As a result, digitalization investments may impact how well a company's stock market performs.

***H_2**: Digitalization has a positive impact on firm performance.*

Environmental Social Governance (ESG), Digitalization, and Firm Performance

Digital and sustainability strategies will be essential to corporate strategy in the digital age. The business's strategy in this period will be based on the extensive sharing of information among many parties and the growth of supply chains into a dynamic ecosystem that typically goes beyond the bounds of the corporation. Better communication between network participants makes information flow more effective, which forces the organization to be more responsive (Oliver, 1991). Digital technology implies a major change in how individuals work and interact with the environment within an organization. Business digitization can also alter a company's interaction with its clients and foster the birth of new business models or the reformulation of conventional marketing tactics (Scuotto et al., 2017). Due to digitalization, customers can communicate directly with companies, making sharing data easier (Papa et al., 2018).

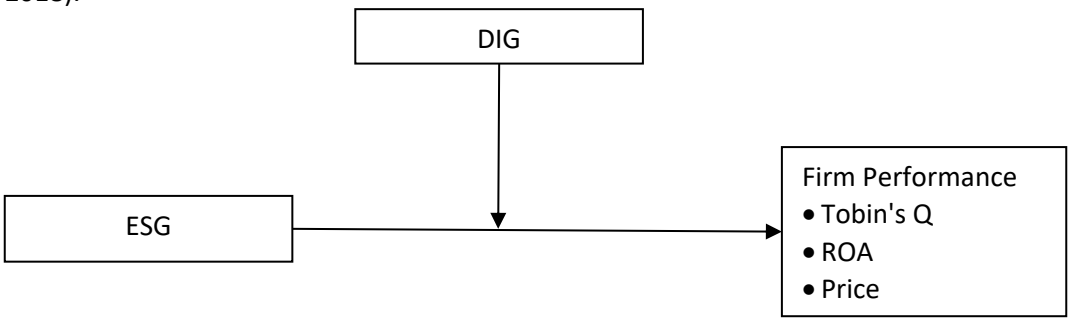

Figure 1 Conceptual Framework

Additionally, it makes businesses aware of their digital reputation. The openness of the market is encouraged by rapid information dissemination, which also reduces knowledge asymmetry and boosts the effectiveness of corporate governance. Digital transformation fosters businesses to fulfill their social responsibilities to provide value for themselves, which also increases social responsibility. More crucially, digital strategies address social and environmental challenges across corporate boundaries. The advantages of including social and environmental issues throughout supply chains are highlighted by expanding sustainable supply chain management. ESG chain actions will be more noticeable to all stakeholders. This study, therefore, contends that digitization can enhance the effect of ESG on corporate performance.

***H_3**: Digitalization strengthens the impact of ESG on firm performance.*

The research model of this study is illustrated in Figure 1.

Research Method

The analytical units used in this study were companies listed on the Indonesian Stock Exchange (BEI) in 2017-2021 that met the research criteria. The study year was chosen

to represent the most recent conditions. Indonesia was chosen as a research object because of the need for more research on specific topics in developing countries. Then, research data were derived from financial reports and annual reports. The researchers employed non-probability sampling with purposive techniques in determining samples. There were three criteria in the selection of research samples. First, the company had an ESG score on Bloomberg because it is a credible source for evaluating the company's ESG scores. Second, it published financial statements and annual reports for 2017-2021, with a period ending in December. Third, the company published and presented financial reports and yearly reports in rupiah currencies. From these criteria, 247 firm years qualified to be the sample of this research.

The dependent variables for this study were Tobin's Q, Stock Price, and Return on Assets (ROA), assessing corporate success by book value and market value. Meanwhile, the ESG score was utilized as an independent variable in this investigation. Then, digitization (DIG) was the moderation variable. The study also used three account variables: corporate size (SIZE), cash flow from operational activity (OCF), and debt ratio. (DER). To answer the first hypothesis, the models (1) - (3) were used. The first hypothesis was then tested by regressing all samples obtained.

$$\text{Tobin's } Q_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 OCF_{it} + \beta_4 DER_{it} + \varepsilon_{it} \dots (1)$$
$$ROA_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 OCF_{it} + \beta_4 DER_{it} + \varepsilon_{it} \dots (2)$$
$$PRICE_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 SIZE_{it} + \beta_3 OCF_{it} + \beta_4 DER_{it} + \varepsilon_{it} \dots (3)$$

The authors conducted two tests to address the second hypothesis. First, models (4) through (6) were employed to perform moderated regression analysis. Second, the research samples were then grouped into two categories based on the characteristics of the samples. Following that, the analysis using these subgroups refers to Sharma et al. (1981), who asserted that subgroup analysis is most often used to identify the moderator variable.

$$\text{Tobin's } Q_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 DIG_{it} + \beta_3 ESG_{it}*DIG_{it} + \beta_4 SIZE_{it} + \beta_5 OCF_{it} + \beta_6 DER_{it} + \varepsilon_{it} \dots (4)$$
$$ROA_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 DIG_{it} + \beta_3 ESG_{it}*DIG_{it} + \beta_4 SIZE_{it} + \beta_5 OCF_{it} + \beta_6 DER_{it} + \varepsilon_{it} \dots (5)$$
$$PRICE_{it} = \alpha + \beta_1 ESG_{it} + \beta_2 DIG_{it} + \beta_3 ESG_{it}*DIG_{it} + \beta_4 SIZE_{it} + \beta_5 OCF_{it} + \beta_6 DER_{it} + \varepsilon_{it} \dots (6)$$

Tobin's Q was calculated by the company's equity market value and the value of the debt divided by total assets. ROA measured profitability, the value obtained from net income divided by the average of total assets. PRICE was measured by the stock market price at the end of the book year of the company i in the year t. ESG scores were obtained from Bloomberg, processing a variety of data. Bloomberg collects information through corporate social responsibility or sustainability reports, annual reports and websites, and other public sources, as well as from direct contact with companies. Using Bloomberg rights calculations, ESG scores (varied from 0 to 100) were calculated from 120 quantitative and qualitative measures across the ESG dimensions. However, details of this assessment were not available. In addition, DIG reflects the adoption of digital

technology represented in seven categories. It was determined with dummy variables; it gets a score of 1 if it adopts one of seven categories -- social media, mobile, big data, cloud computing, IoT, platform development, and artificial intelligence. Otherwise, it has a score of 0 if it does not have any adoption. Besides, the natural logarithm of the total asset measured SIZE. While OCF is an operating cash flow divided by total assets, DER is the ratio of debt to capital.

Result and Discussion

Descriptive Statistics and Regression Analysis

Table 1 displays a descriptive statistical analysis depicting the averages, maximum values, minimum values, and standard deviations of the data spread. The ESG scores show the company's performance scores related to social and environmental responsibility. Price and Tobin's Q values exhibit the firm's market performance. An increase in value indicates a successful performance in the view of investors. The ROA, in contrast, illustrates how the company's books have performed.

Table 1 Descriptive Statistics

	N	Mean	Maximum	Minimum	Std. Dev.
Models (1) and (2)					
Tobin's Q	280	1.4617	22.5590	0.0160	2.4980
ROA	280	0.1228	2.3132	-0.2123	0.2884
ESG	280	35.9860	70.2444	0.0004	15.3276
Size	280	12.3543	14.5650	7.3422	1.8527
OCF	280	0.1117	3.9318	-0.1385	0.2542
DER	280	1.5441	24.8489	0.0100	2.2072
Model 3					
Price	347	3957.224	75611.33	46.760	7622.901
ESG	347	36.2058	70.2444	0.0004	15.4767
Size	347	12.6386	15.236	7.3421	1.9310
OCF	347	0.0941	3.9318	-0.3615	0.2331
DER	347	2.1271	24.8489	0.0900	2.6722

Table 2 presents the F-test results. All models could predict dependent variables with significance values below one percent. Models (1), (2), and (3) had adjusted R^2 values of 21.13%, 26.94%, and 3.32%, respectively. Data processing results to answer hypothesis 1 are presented in Table 2.

Table 2 Results For Hypothesis 1

Variable	Model		
	Tobin's Q (1)	ROA (2)	Price (3)
C	-2.9206	0.2611	-4414.86
	(-2.8646)	(2.3268)	(-1.4915)
ESG	0.0153**	0.0021**	24.9417
	(1.7291)	(2.1358)	(0.9434)
Size	0.2858***	0.0260***	638.3452***
	(3.8668)	(3.2291)	(2.9806)
OCF	2.0091***	0.1408***	2564.327*
	(3.7738)	(2.4045)	(1.4663)
DER	-0.2338***	0.0599***	-395.0222**
	(-3.4039)	8.9142	(-2.5473)
n	280	280	347
Adj. R^2	0.2113	0.2694	0.0332
F stat.	15.9494***	26.7165***	3.9794***

Generally, company performance uses three measurements: book performance is represented by ROA, while Tobin's Q and stock price both measure market performance. In this study, the ESG coefficient for model (1) was 0.0153 with a t-value of 1.7291, significant at a rate of 5%. The ESG factor for model (2) was 0.0021 with a t-value of 2.1358, significant at 5%. This result reinforces hypothesis 1 that ESG could improve the performance of companies, ROA, and Tobin's Q. However, ESG could not influence price. Furthermore, a more detailed analysis was carried out for the impact of ESG on stock prices. All controlling variables consistently influenced Tobin's Q, ROA, and price.

Table 3 Additional Analysis: PRICE

Variable	Small	Big	High	Low
C	2662.051	-50607.45	-9360.794	-9029.822
	(1.8463)	(-2.2265)	(-2.4154)	(-1.6961)
ESG	59.7608***	-53.7084	154.1593***	17.1316
	(4.3261)	(-1.1101)	(3.1923)	(0.2624)
Size	-231.454**	4205.356**	492.901***	994.879***
	(-2.0743)	(2.3861)	(2.7399)	(2.5543)
OCF	1634.658***	23991.04***	1317.380	16856.4***
	(2.4574)	(3.5987)	(1.3003)	(2.2155)
DER	-187.1061**	-980.1856***	-219.2436**	-634.933**
	(-2.2675)	(-2.8757)	(-2.1379)	(-1.7143)
n	173	174	173	174
Adj. R^2	0.1564	0.1184	0.0768	0.0564
F stat.	8.9763***	6.8110***	4.5781***	3.5895***

Table 3 reveals additional analysis for the model (3). The sample was divided by company size and ESG value. If the firm's size is larger than the average, it goes into the category 'big'; if not, it is 'small.' For ESG scores, if the ESG score is greater than the mean, it belongs to the 'high' and otherwise falls into the category 'low.' The additional analysis showed that ESG could raise the stock price if it is high and positively affects only small companies.

Discussion

The results support the initial belief that when a company is included in Bloomberg's ESG score, it can send credible signals to potential investors about its commitment to the ESG agenda. According to the stakeholder hypothesis, ESG initiatives can boost business performance and value by aligning with stakeholders' interests. ESG-stronger companies have a greater potential for growth than ESG-weaker companies. The two ways that ESG activity works to add value are as follows: The first claims that better ESG performance decreases the discount rate and raises projected cash flow (Pedersen et al., 2021). Second, it argues that ESG activities can create company value by maximizing shareholder profits. For instance, shareholders can assess the ESG operation's effects on the environment or society as well as the cash flow it generates. Based on this strategy, shareholders gain from owning a business that adheres to the ESG idea. Thus, ESG activities can have a multiplicative effect on the company's market performance. For example, motivated employees who are delighted with their jobs will work harder, satisfied suppliers offer more discounts, and others, which boosts the business reputation and results in better financial performance (Dam & Scholtens, 2015; Lev et al., 2010). In sectors where customer perceptions are highly sensitive, corporate giving positively correlates with anticipated revenue growth. Sassen et al. (2016) also found that higher ESGs can reduce the risk of a company and increase the value of the company. The findings add evidence to the ongoing theoretical debate in the literature on corporate social responsibility and the environment regarding the advantages and disadvantages of corporate stakeholders implementing ESG policies and strategies.

Table 4 shows that DIG was not an independent variable, as seen in columns 4a, 5a, and 6a. This insignificant empirical result can be explained because the impact of digitalization has the potential to determine the company's prospects, which are difficult to predict. Getting a good response to technological change is a big challenge for any company. Well-established companies face different challenges, as such changes may destroy the company's competence or interfere with the industry in which they operate (Hossnofsky & Junge, 2019). Investing in new technologies is inevitable to keep up with the developments of the times to survive and succeed. However, market analysts need to be more motivated to positively evaluate information about new technologies because it takes time to analyze and possibly inaccurate forecasts, thus giving them reputation losses (Feldman, 2016; Theeke et al., 2018). Analysts do not favor investing in new technologies, as there is a cash flow out of the company so that the performance could be better in the short term.

Studies in developed countries consistently have found a positive link between corporate digitization and corporate performance, although technology has a potentially disruptive impact (Bouwman et al., 2019; Ferreira et al., 2019). Instead, research unveils that digitization has a variety of effects on corporate performance in emerging countries like Africa and Asia (Bogoviz et al., 2019; Chauhan et al., 2021). These diverse findings can be attributed to differences in digitization conceptualization without distinguishing between corporate digitization and market digitization. For instance, Bogoviz et al. (2019) affirmed that, in developing countries, economic actors, such as consumers and

Table 4 Moderated Regression Analysis

Variable	Tobin's Q		ROA		PRICE	
	4a	4b	5a	5b	6a	6b
C	-1.9889	-1.5484	0.2616	0.2395	-4170.73	-5807.34
	(-1.8377)	(-1.2604)	(2.3310)	(1.8782)	(-1.4022)	(-1.6815)
ESG	0.0215**	0.0082	0.0020**	0.0026	22.8789	69.5661
	(2.2730)	(0.4140)	(2.0341)	(1.2908)	(0.8616)	(1.2277)
DIG	0.4094	-0.1819	0.0306	0.0603	875.645	2950.092
	(1.2374)	(-0.2151)	(0.8915)	(0.6868)	(0.8678)	(1.2079)
ESG*DIG		0.0171		-0.0008		-59.3132
		(0.7596)		(-0.3677)		(-0.9327)
Size	0.1728**	0.1733**	-0.0276***	-0.0276***	574.651***	578.355**
	(2.1716)	(2.1754)	(-3.3435)	(-3.3408)	(2.5375)	(2.5530)
OCF	2.4373***	2.4371***	0.1355**	0.1356**	2404.953*	2398.292*
	(4.2945)	(4.2907)	(2.3027)	(2.2992)	(1.3672)	(1.3631)
DER	-0.0211	-0.0168	0.0599***	0.0597***	-402.3732**	-411.6293***
	(-0.3255)	(-0.2583)	(8.9169)	(8.8377)	(-2.5898)	(-2.6435)
n	280	280	280	280	347	347
Adj. R^2	0.0938	0.0924	0.2688	0.2666	0.0359	0.0322
F stat.	6.7818***	5.7389***	21.5162***	17.8962***	3.3318***	2.9205***

companies, are initiating the process of digitization, but developed countries are following a directive approach. In developing countries, companies prioritize short-term financial goals through control and cost reduction before considering long-term investments in digitalization.

Similarly, Chauhan et al. (2021) identified extrinsic barriers in developing countries related to culture and national contexts, such as contractual and legal uncertainty, that harmed technology adoption, which could further lower company performance amid market digitization. In the sense that it does not boost book performance, the phenomenon of disruptive innovation considers customer reaction to the company's technical changes (Hill & Rothaermel, 2003). Additionally, there are potential internal obstacles like organizational flexibility or manager cognitive constraints (Benner & Tushman, 2002; Tripsas & Gavetti, 2017).

Since Table 4, columns 4b, 5b, and 6b show that DIG was not a moderation variable, the authors analyzed further by trying to divide the sample research. The sample was then grouped into two categories: companies that have already and have yet to adopt digitization. Analysis using subgroups can be done to identify moderator variables (Sharma et al., 1981).

Additional Analysis: Sub-Sample Analysis

Table 5 displays the result that DIG could be said to be a moderation variable. In the DIG=1 group, ESG positively influenced Tobin's Q, ROA, and price, while in DIG=0, ESG did not influence Tobin's Q, ROA, and price. These results indicate that ESG did not affect the company's performance in groups that did not digitize.

Table 5 Sub-Sample Analysis

Variable	DIG = 1			DIG = 0		
	Tobin's Q	ROA	Price	Tobin's Q	ROA	Price
C	-2.2328	0.2373	-2301.171	-1.0312	0.1267	-5076.622
	(-1.4245)	(0.9170)	(-0.885)	(-1.4420)	(0.6949)	(-1.1889)
ESG	0.0262**	0.0010**	49.780***	0.0008	0.0023	14.2390
	(2.1256)	(1.8845)	(1.7623)	(0.9167)	(1.1931)	(0.4281)
Size	0.2123**	-0.0131	271.947*	0.1207**	-0.0193	765.659**
	(1.9162)	(-0.6784)	(1.3798)	(2.3036)	(-1.4471)	(0.0128)
OCF	2.3642***	0.1599***	7155.131*	6.7675***	0.2626	2215.805
	(3.6054)	(5.9219)	(1.4388)	(4.1061)	(0.6248)	(1.1149
DER	-0.0240	-0.01589***	-149.7068	0.0161	0.0709	-560.3814
	(-0.2230)	(-3.0251)	(-1.1257)	(0.4644)	(8.0283)***	(0.008)***
n	205	162	264	75	75	83
Adj. R^2	0.0771	0.2374	0.0602	0.1870	0.5103	0.0301
F stat.	5.2633***	13.5288***	2.3123*	5.2557***	20.275***	3.0416**

Consequently, the effects of digitization on business management need to be further investigated. The link between digitalization and sustainability can open up better business and society opportunities (Ahmad & Murray, 2019; Castro et al., 2021). Digitalization reinforces ESG activity because of its ability to drive sustainability by improving company transparency and accountability. Digitalization also aids in increasing the involvement of new stakeholders through creative means (Anastasiadou et al., 2023) through innovative ways, thus adding value from a long-term perspective (Di Vaio et al., 2021) and enhancing business performance (Truant et al., 2021). Many experts agree that digitalization can tackle social, environmental, and governance concerns in unprecedented ways (Castro et al., 2021). A significant transformation and a change in strategic priorities are made possible by the union of sustainability and digitization (Kiron & Unruh, 2018). The authors can affirm that digitization supports the sustainability of implementation processes (Gouvea et al., 2018), impacting sustainability and, consequently, profitability performance.

Conclusion

The research aims to analyze ESG, digitization, and firm performance, where the three interrelationships have yet to be much explored. First, the ESG relationship with the company's performance was re-tested. Corporate ESG responsibilities are believed to impact shareholders and stakeholders significantly. Empirical results exposed that ESG could boost the performance of the company's book, represented by ROA, and increase the company's value in the eyes of investors, as measured by Tobin's Q. Secondly, it analyzed the role of digitization in the company's performance. Furthermore, the research explored the role of digitalization and ESG. Digitization has consequences for transparency and accountability, creating new ways of shaping, monitoring, and regulating sustainability. However, more importantly, digital strategies go beyond business boundaries and cover environmental and social issues. Therefore, it is no longer possible to separate digital and sustainability trends. Doing business through the

lens of sustainability supported by digitalization will enable companies to create value for business, society, and planet Earth. Despite the fact that the findings of the moderated regression analysis test were not statistically significant, the sub-sample test revealed that ESG only enhanced performance and value in businesses that had embraced digitization.

The research results give some implications to theory and practice. First, this study enriches research results and supports instrumental and signaling theory literature. Second, companies collaborating digital technology with environmental and social responsibility activities positively impact profitability and sustainable performance. However, this research is not free from limitations. At the time, the sample division was only differentiated based on the company that had already used one of the forms of digitization and the company that did not do digitization at all. Hence, subsequent research could be categorized into more specific digital technologies – big data, IoT, or social media. Future research should also test the relationship between digitization, sustainability, and financial performance in various sectors and countries to understand whether industry and country conditions are relevant variables affecting results.

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Conflicts of Interest

The author declares no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript, or in the decision to publish the results.