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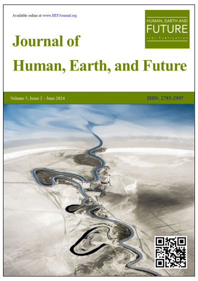

Sustainable Human Capital Management, ESG, and Firm Performance: Moderating Role of ESG Disclosure

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Abstract

This study investigates the relationships between sustainable human capital management practices, ESG performance, ESG disclosure, and firm financial performance. Using a sample of 387 S&P 500 firms from 2013 to 2023 and a panel data regression approach, we examine the impact of training expenditure, workforce diversity and inclusion, pay equity, and employee benefits on ESG performance. We also explore the association between ESG performance and ESG disclosure, the effect of ESG performance on financial performance, and the moderating role of ESG disclosure in the ESG-financial performance relationship. Our findings reveal that sustainable human capital management practices have a positive and significant impact on ESG performance, which in turn positively influences firm financial performance. We also find a positive relationship between ESG performance and ESG disclosure, and that ESG disclosure moderates the ESG-financial performance link, with the positive association being stronger for firms with higher levels of ESG disclosure. This study contributes to the literature by offering an integrated approach to examine the relationships between sustainable human capital management, ESG performance, ESG disclosure, and financial performance, providing novel insights into the drivers and outcomes of corporate sustainability in the context of human capital management.

Keywords: Sustainable Human Capital Management; ESG Performance; ESG Disclosure; Firm Financial Performance; Effects of Globalization; Sustainability.

1. Introduction

Sustainable human capital management has emerged as a crucial aspect of corporate sustainability in recent years. It encompasses a range of practices aimed at developing, managing, and retaining a company's workforce in a manner

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that aligns with environmental, social, and governance (ESG) principles [1, 2]. These practices include investing in employee training and development, promoting diversity and inclusion, ensuring fair compensation and benefits, and fostering a supportive and engaging work environment [3, 4]. The growing importance of ESG factors in the business world has been driven by increasing stakeholder demands for corporate responsibility, transparency, and accountability [5]. Investors, consumers, employees, and regulators are increasingly expecting companies to demonstrate their commitment to sustainability and disclose their ESG performance [6, 7]. This has led to the proliferation of ESG reporting frameworks, standards, and ratings, which aim to provide stakeholders with comparable and reliable information on companies' ESG practices and outcomes [8].

The relationship between human capital management and ESG performance has been explored in the literature, with studies examining the impact of various HR practices on environmental and social outcomes [9]. For instance, employee training and development have been linked to improved eco-efficiency and reduced environmental incidents [10, 11], while diversity and inclusion initiatives have been associated with better corporate social performance [12, 13]. However, these studies often focus on individual HR practices rather than a comprehensive set of sustainable human capital management practices. Similarly, the link between ESG performance and financial performance has been widely investigated, with meta-analyses suggesting a positive overall relationship [14, 15]. ESG performance has been found to contribute to improved profitability, a lower cost of capital, and higher firm value [16, 17]. Nevertheless, the mechanisms underlying this relationship remain underexplored, particularly regarding the role of sustainable human capital management. Moreover, while the importance of ESG disclosure has been increasingly recognized [18, 19], its interaction with sustainable human capital management and ESG performance in influencing financial outcomes has received limited attention. Some studies have examined the determinants and consequences of human capital disclosure [20, 21], but not in the context of a broader set of ESG disclosures and their impact on the ESG-financial performance relationship.

The growing importance of sustainable human capital management and environmental, social, and governance (ESG) factors has led to increased scrutiny of firms' ESG performance and disclosure. The global sustainable investment market has grown by 34% between 2016 and 2018, reaching $30.7 trillion in assets under management [22]. Despite this growth, only 36% of the S&P 500 companies provided comprehensive ESG disclosure in 2018 [23], highlighting the need for improved transparency and accountability in corporate sustainability reporting. Furthermore, the COVID-19 pandemic exposed the vulnerabilities of companies with poor human capital management practices and inadequate ESG disclosure. Albuquerque et al. [24] found that firms with higher ESG performance experienced less negative stock returns during the pandemic, suggesting that sustainable practices can enhance corporate resilience in times of crisis. However, the economic costs of the pandemic have been substantial, with global GDP projected to decline by 4.4% in 2020 [25]. As companies navigate the challenges of the post-pandemic world, investing in sustainable human capital management and improving ESG disclosure will be crucial for building a more resilient and sustainable future.

While prior research has explored various aspects of this relationship, notable gaps remain in our understanding of the complex interplay between sustainable human capital practices, ESG performance, ESG disclosure, and firm financial outcomes. For instance, although studies have examined the link between individual human resource practices and ESG performance (e.g., [1, 9]), there is a lack of comprehensive research investigating the combined effect of a broad set of sustainable human capital management practices on ESG outcomes. Moreover, while the relationship between ESG performance and financial performance has been widely studied (e.g., [15, 16]), the mechanisms underlying this relationship, particularly the role of ESG disclosure, have received limited attention. Prior research has examined the determinants and consequences of ESG disclosure (e.g., [18]), but has not fully explored its potential moderating effect on the ESG-financial performance link. To address these gaps, this study proposes an integrated framework that simultaneously examines the relationships between sustainable human capital management, ESG performance, ESG disclosure, and firm financial performance. By providing a holistic investigation of these interconnections, this research aims to contribute to the literature by offering novel insights into the drivers and outcomes of corporate sustainability in the context of human capital management. This study aims to address these research gaps by providing a holistic examination of these relationships. In other words, this study aims to address these research gaps by investigating the following key research questions:

- How do sustainable human capital management practices influence a firm's ESG performance?
- What is the relationship between a firm's ESG performance and its level of ESG disclosure?
- To what extent does a firm's ESG performance impact its financial performance?

By addressing the aforementioned research questions, this study seeks to provide a comprehensive understanding of how these factors interact and influence each other in the context of corporate sustainability. Therefore, the main purpose of this study is to examine the relationships between sustainable human capital management practices, ESG performance, ESG disclosure, and firm financial performance. This study draws upon several theoretical perspectives to inform its hypotheses and analysis. Stakeholder theory [26] provides a foundation for understanding the importance of sustainable human capital management and ESG performance in meeting the needs and expectations of various stakeholders. Legitimacy theory [27] offers insights into the role of ESG disclosure in enhancing a company's legitimacy and social license to operate. The resource-based view [28] highlights the potential of sustainable human capital management practices to create valuable, rare, inimitable, and non-substitutable resources that can contribute to a company's competitive advantage and financial performance.

This study makes several significant contributions to the literature on sustainable human capital management, ESG, and corporate financial performance. Our research provides a comprehensive examination of the relationships between sustainable human capital management practices, ESG performance, ESG disclosure, and firm financial performance, addressing a notable gap in the existing research and advancing our understanding of the importance of transparency in corporate sustainability.

The findings of this study also have important practical implications for companies, investors, and policymakers. For companies, the study highlights the potential benefits of investing in sustainable human capital management practices and ESG performance, as well as the importance of ESG disclosure in enhancing the financial returns of these investments. For investors, this study provides valuable insights into the factors that contribute to a company's ESG and financial performance, which can inform their investment decisions and engagement strategies. For policymakers, the study underscores the need for policies and regulations that promote sustainable human capital management, ESG performance, and ESG disclosure to foster a more sustainable and responsible business environment. Moreover, this study is particularly timely and relevant given the increasing attention to ESG issues in the wake of the COVID-19 pandemic, which has highlighted the importance of resilient and sustainable business practices [24]. As companies navigate the challenges and opportunities of the post-pandemic world, understanding the relationships between sustainable human capital management, ESG performance, ESG disclosure, and financial performance will be crucial for building a more sustainable and prosperous future.

The remainder of this manuscript is structured as follows. Section 2 introduces the research variables and the theoretical framework underpinning the study. Section 3 describes the research method, including the sample, data sources, and empirical models used in the analysis. Section 4 presents the results of the empirical analysis, testing the hypothesized relationships between sustainable human capital management, ESG performance, ESG disclosure, and firm financial performance. Section 5 discusses the findings, their implications, and limitations of the study, and avenues for future research. Finally, Section 6 concludes the manuscript by summarizing the key insights and contributions of the study.

2. Theoretical Framework

2.1. Sustainable Human Capital Management

Sustainable human capital management (SHCM) is an emerging approach that integrates environmental, social, and governance (ESG) considerations into the development and use of an organization's workforce. It recognizes that employees are not just costs to be minimized but valuable assets to be nurtured for long-term value creation [29]. SHCM extends traditional human resource management by incorporating sustainability principles and metrics. The concept of SHCM has evolved from the broader field of sustainable management, which seeks to balance economic, social, and environmental performance [30]. It is rooted in stakeholder theory, which argues that firms should serve the interests of all stakeholders, including employees, rather than just shareholders [26]. SHCM also draws on human capital theory, which views employee skills and abilities as a form of capital that can generate returns for organizations [31].

The business case for SHCM is supported by a growing body of empirical evidence. Studies have linked sustainable HRM practices to improved operational performance, innovation, and financial results [1, 32]. Investors are also increasingly using ESG criteria, including human capital indicators, to assess corporate value and risk [33]. Moreover, sustainable HRM can enhance corporate reputation and social legitimacy [34]. Despite these potential benefits, adoption of SHCM remains uneven. Many organizations still view sustainability and HRM as separate domains [35]. Short-term cost pressures often take precedence over long-term human capital development. Managers may also lack the skills and knowledge to implement SHCM effectively [36]. Overcoming these barriers requires a strategic mindset, leadership commitment, and alignment of HRM systems with sustainability goals. Looking ahead, several trends are likely to accelerate the growth of SHCM. One is the increasing expectations of employees, investors, and society for responsible business practices [37]. Another is the rising importance of intangible assets, including human and social capital, as drivers of firm value [38]. The COVID-19 pandemic has also highlighted the vital role of HRM in ensuring employee well-being and organizational resilience [39]. As these forces continue to shape the business landscape, SHCM will become an increasingly critical capability for sustainable success.

Recent research has identified several key dimensions of SHCM. These include investing in employee training and development, promoting diversity and inclusion, ensuring pay equity, providing comprehensive benefits, fostering employee well-being, and engaging workers in sustainability initiatives [3, 40, 41]. By attending to these areas, companies can enhance their ability to attract, motivate, and retain high-quality talent while also contributing to wider societal goals. This study examines sustainable human capital management through the lens of four key sub-variables: training expenditure, workforce diversity and inclusion, pay equity, and employee benefits. These factors reflect a company's investment in developing employee capabilities, fostering an inclusive culture, ensuring fair compensation, and supporting worker well-being. By considering these dimensions, the research aims to provide a comprehensive assessment of an organization's commitment to long-term, socially responsible workforce management practices.

Training Expenditure

Investing in employee training and development is a key factor in sustainable human capital management. Studies have shown that upgrading employee skills through training programs can increase productivity by over 15% [42]. Increasingly, training is enabled by digital technologies, allowing for personalized, flexible, and scalable capability building across global workforces [43, 44]. Beyond just improving employee performance, training also has spillover effects on a company's ESG commitment. Programs can be designed to expose employees to sustainability concepts, ethical codes of conduct, and diversity values alongside job-specific skills.

A focus on training reflects a long-term orientation toward developing human capital in an organization. It enables employees to continuously adapt their capabilities to changing business needs and ESG priorities. Analyzing training investments and linking them to retention, cost savings, and sustainability goals allows companies to optimize this important lever. Training expenditure per employee has thus emerged as a core metric for assessing a firm's commitment to socially responsible development of its workforce [45].

Workforce Diversity and Inclusion

Diversity and inclusion across dimensions like gender, ethnicity, age, and seniority levels is another critical component of sustainable human capital management. Research links gender-balanced leadership with superior financial results, risk management, and resilience [46, 47]. Diversity in age, culture, and roles is also associated with up to 83% higher innovation, according to global executive surveys. Clearly, diversity and inclusion (D&I) is shifting from a compliance issue to a driver of competitive performance.

At the same time, workforce composition metrics like women in leadership, minority representation, and non-executive employee voice have become the top ESG assessment criteria for companies [48, 49]. This reflects rising societal expectations for businesses to demonstrate equality and inclusiveness in practice. A strong D&I strategy signals an employer that provides fair opportunities, values diverse perspectives, and proactively mitigates the risks of discrimination. It is key to attracting and retaining high-quality, purpose-driven talent across all levels of the organization.

Pay Equity

Pay equity, especially the ratio of executive compensation to average worker pay, has come under increased scrutiny as a measure of sustainable human capital management. Extreme gaps between CEO and median employee earnings have been linked to lower future shareholder returns in numerous studies [50]. Reasons include poor board oversight, short-term focus, higher turnover, and erosion of trust in leadership. Most corporate incentive plans do not sufficiently address these imbalances.

However, the prioritization of pay equity is rising among investors and other stakeholders. Shareholder proposals urging disclosure and reduction of CEO-to-worker pay ratios are becoming more common [51]. CEO-to-median salary ratios are also being incorporated into ESG rating frameworks as a reflection of how a company shares value with its workforce [52, 53]. Excessive executive payouts may crowd out other sustainability investments. Equitable pay practices are thus emerging as essential for motivating employee productivity and maintaining social legitimacy.

Employee Benefits

The provision of comprehensive employee benefits is the fourth key factor in sustainable human capital management. Healthcare, insurance, retirement plans, wellness programs, and related offerings have become pivotal to attracting and retaining talent. Companies with greater benefit investment report over 20% lower turnover on average. Millennials and younger workers especially prioritize extensive benefits and purpose-driven cultures. Benefits that directly impact employee well-being can foster greater loyalty and constructive worker relationships.

However, access to benefits often remains uneven, with many part-time and frontline workers excluded. Metrics like benefits spend per employee, coverage parity across contract types, and investment in high-priority areas have thus entered mainstream ESG assessments [54, 55]. Generous and equitable benefits signal socially responsible employers according to rating agencies. They can boost productivity and retention while reducing long-term health and social costs. Employee benefits are therefore an important lever for aligning business and employee interests in a sustainable manner.

2.2. Hypothesis Development

Sustainable human capital management (SHCM) practices have been increasingly linked to improved environmental, social, and governance (ESG) performance in organizations. Investing in employee training and development, promoting diversity and inclusion, ensuring pay equity, and providing comprehensive benefits can enhance a company's ability to attract and retain high-quality talent while also contributing to broader societal goals [3, 40]. These practices demonstrate a commitment to employee well-being and development, which can foster a more engaged and productive workforce. Moreover, by aligning human resource management with sustainability principles, companies can better integrate ESG considerations into their overall strategy and decision-making processes [30].

Empirical research supports the positive relationship between SHCM and ESG performance. Voegtlin & Greenwood [9] found that companies with strong SHCM practices, such as employee participation in decision-making and extensive training programs, had higher ESG ratings. Similarly, research by Aust et al. [1] demonstrated that firms with sustainable HRM practices, including diversity management and responsible compensation, exhibited better environmental and social performance. These findings suggest that by investing in human capital in a sustainable manner, companies can enhance their overall ESG profile and contribute to long-term value creation [33]. Therefore, the first hypothesis of this study is expressed as follows:

H1: *Sustainable Human Capital Management increases a firm's ESG performance.*

Companies with strong environmental, social, and governance (ESG) performance are increasingly motivated to disclose their sustainability practices and outcomes to stakeholders. ESG disclosure allows firms to showcase their responsible business practices, demonstrate transparency, and build trust with investors, customers, and society at large [18]. By communicating their ESG performance, companies can differentiate themselves in the market, enhance their reputation, and potentially attract more investment [33]. Moreover, ESG disclosure can help firms legitimize their sustainability efforts and respond to the growing demands for corporate accountability [7].

Research has shown that companies with higher ESG performance tend to engage in more extensive and higher-quality ESG disclosure. Clarkson et al. [56] found that firms with better environmental performance provided more comprehensive environmental disclosures. Similarly, research by Hummel & Schlick [57] demonstrated that companies with superior sustainability performance disclosed more ESG information and used more objective and comparable reporting standards. These findings suggest that firms with strong ESG records are more likely to proactively communicate their sustainability efforts to stakeholders.

Furthermore, the relationship between ESG performance and disclosure can be self-reinforcing. As companies improve their ESG practices and outcomes, they may feel more confident and motivated to transparently share their progress. In turn, the act of disclosure itself can drive further improvements in ESG performance, as it subjects companies to greater scrutiny and feedback from stakeholders [58]. This virtuous cycle between performance and disclosure can contribute to the continuous advancement of corporate sustainability. Therefore, the second hypothesis of this study is designed as follows:

H2*: Companies with higher ESG performance are more likely to engage in extensive ESG disclosure.*

In addition, larger firms are expected to have more resources to invest in ESG initiatives and may face greater stakeholder pressure to engage in ESG disclosure [59, 60]. Therefore, controlling firm size helps to isolate the effect of ESG performance on ESG disclosure by accounting for these size-related influences. Therefore, firm size will be considered as the controlling variable in this relationship when testing the model.

Environmental, social, and governance (ESG) performance has been increasingly linked to improved financial outcomes for companies. Firms with strong ESG practices are often better positioned to manage risks, capitalize on opportunities, and create long-term value for shareholders [61]. By addressing sustainability challenges and meeting the needs of diverse stakeholders, companies can enhance their resilience, innovation, and competitiveness [33]. Moreover, investors are increasingly integrating ESG factors into their decision-making processes as they recognize the potential financial materiality of sustainability issues [6].

Empirical research supports the positive relationship between ESG performance and firm financial performance. A meta-analysis by Friede et al. [15] found that most studies showed a positive correlation between ESG factors and corporate financial performance. Similarly, Eccles et al. [33] demonstrated that companies with high sustainability performance had better stock market returns and accounting performance than low-sustainability firms over an 18-year period. These findings suggest that companies can enhance their financial outcomes by investing in and managing their ESG performance.

Several mechanisms may explain the link between ESG performance and firm financial performance. Companies with strong ESG practices may benefit from improved risk management because they are better prepared to anticipate and mitigate potential environmental and social challenges [62]. ESG performance can also enhance a company's reputation and brand value, leading to increased customer loyalty, employee satisfaction, and stakeholder trust [63]. Furthermore, companies with high ESG standards may have access to a wider pool of capital, as sustainably oriented investors increasingly seek responsible investment opportunities [19]. Hence, the third hypothesis of this study is considered as follows:

***H3**: Companies with higher ESG performance tend to exhibit better financial performance.*

The relationship between ESG performance and firm financial performance may be influenced by the extent and quality of a company's ESG disclosure. By transparently communicating their sustainability practices and outcomes, companies can signal their commitment to ESG issues and build trust with stakeholders [18]. ESG disclosure can also help reduce information asymmetries between firms and investors, allowing the market to better assess and value a company's sustainability efforts [64]. Moreover, the process of preparing and publishing ESG disclosures can help companies identify areas for improvement and drive internal changes that enhance their overall ESG performance [7].

Empirical research suggests that ESG disclosure can moderate the relationship between ESG performance and firm financial outcomes. Fatemi et al. [65] found that the positive association between ESG performance and firm value was stronger for companies with high levels of ESG disclosure. Similarly, Bernardi & Stark [66] demonstrated that the relationship between environmental performance and market valuation was more pronounced for firms with more comprehensive environmental disclosures. These findings indicate that ESG disclosure can enhance the financial benefits of strong ESG performance by providing stakeholders with relevant and reliable information about a company's sustainability practices. Thus, this study hypothesizes the fourth hypothesis as follows:

***H4**: The positive relationship between ESG performance and firm financial performance is moderated by the level of ESG disclosure, such that the relationship is stronger for companies with more extensive ESG disclosure.*

The conceptual framework of this study, as illustrated in Figure 1, depicts the hypothesized relationships between sustainable human capital management, ESG performance, ESG disclosure, and firm financial performance. The model suggests that sustainable human capital management practices, including training expenditure, workforce diversity and inclusion, pay equity, and employee benefits, contribute to improved ESG performance (H1). In turn, companies with higher ESG performance are expected to engage in more extensive ESG disclosure (H2). The framework also posits a direct positive relationship between ESG performance and firm financial performance (H3). Lastly, the model proposes that the level of ESG disclosure moderates the relationship between ESG performance and firm financial performance, such that the relationship is stronger for companies with more comprehensive ESG disclosure (H4). The inclusion of firm size as a control variable in the relationship between ESG performance and ESG disclosure (H2) accounts for the potential influence of organizational scale on these factors.

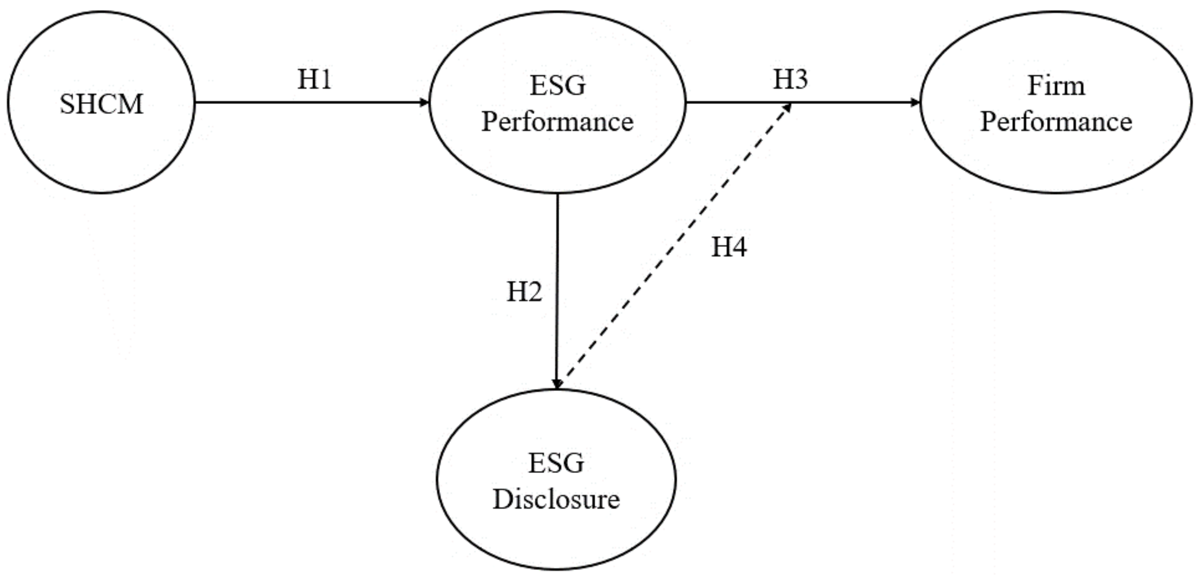

Figure 1. Conceptual framework illustrating the hypothesized relationships among sustainable human capital management, ESG performance, ESG disclosure, and firm financial performance, with firm size as a control variable in the relationship between ESG performance and ESG disclosure.

3. Research Method

3.1. Research Design and Data

This study employs a panel dataset of 387 publicly listed companies over 10 years from 2013 to 2023 to empirically test the hypothesized relationships. The sample consists of the S&P 500 firms, selected based on data availability and consistency across the study period. The sustainable human capital management variables were constructed using data from various sources. Training expenditure per employee (TRNExp) data are obtained from company financial statements and annual reports. Workforce diversity and inclusion (DIVInc) information is gathered from company annual reports, proxy statements, and CSR reports. Pay equity (PayEq) data is sourced from company proxy statements, while employee benefits (EmpBen) data is collected from company annual reports and financial statements. ESG performance data is obtained from MSCI, Sustainalytics, and Thomson Reuters ESG, and ESG disclosure scores are sourced from Bloomberg. Firm performance (FirmPerf) and control variables, including firm size (Size), profitability (ROA), leverage (Lev), and R&D intensity (R&D), are derived from Compustat and Capital IQ. Industry classification (Ind) is based on two-digit SIC codes obtained from Compustat and Capital IQ.

The final sample comprises 387 firms representing 11 sectors based on two-digit Standard Industrial Classification (SIC) codes. The longitudinal nature of the data allows for the examination of both cross-sectional and temporal relationships between sustainable human capital management practices, ESG performance, ESG disclosure, and firm performance. Table 1 presents the distribution of sample firms across various industries, demonstrating the broad sector representation and enhancing the generalizability of the findings.

Table 1. Distribution of sample by industry

Industry (SIC two digits)	Number of Firms	Percentage (%)
Agriculture, Forestry, and Fishing (01-09)	8	2.07
Mining (10-14)	22	5.68
Construction (15-17)	12	3.10
Manufacturing (20-39)	143	36.95
Transportation, Communications, Electricity, Gas, and Sanitary Services (40-49)	45	11.63
Wholesale Trade (50-51)	18	4.65
Retail Trade (52-59)	37	9.56
Finance, Insurance, and Real Estate (60-67)	68	17.57
Services (70-89)	31	8.01
Public Administration (91-99)	3	0.78
Total	**387**	**100**

To ensure the robustness of the results, several diagnostic tests were conducted. The Variance Inflation Factor (VIF) test is employed to assess multicollinearity among the independent variables, with all VIF values remaining below the threshold of 5, indicating no significant multicollinearity concerns [67].

3.2. Variables and Models

ESG Performance: The dependent variable in this study is a firm's overall ESG performance, which is measured using total normalized scores from independent rating agencies such as MSCI, Sustainalytics, or Thomson Reuters ESG (formerly ASSET4) [68, 69]. These specialized providers assess a company's environmental, social, and governance performance using multiple criteria, offering a comprehensive evaluation of corporate sustainability [70]. The aggregated ESG score reflects a firm's commitment to responsibility across various dimensions, serving as a reliable proxy for ESG performance in the growing literature on the relationship between human capital and sustainability [71, 72].

Sustainable Human Capital Management (SHCM): The key independent variables in this study are four measures of sustainable human capital management practices: training expenditure, workforce diversity and inclusion, pay equity, and employee benefits. These variables capture a firm's investment in developing and supporting its human capital in a socially responsible manner. Training Expenditure per Employee (TRNExp) is measured as the total annual training and development expenses divided by the number of employees. This variable reflects a company's commitment to enhancing employee skills and knowledge, which can lead to improved productivity, innovation, and ESG performance [73, 74].

Workforce Diversity and Inclusion (DIVInc): is measured as the percentage of women and underrepresented minorities in the workforce and management positions. This variable captures a firm's efforts to create an inclusive workplace and leverage the benefits of diversity, such as enhanced decision-making, creativity, and stakeholder representation [13, 75]. Pay Equity (PayEq) is measured as the ratio of median employee compensation to CEO compensation. This variable reflects the fairness of a company's compensation practices and its commitment to reducing income inequality [76, 77].

Employee Benefits (EmpBen): is measured as the total annual expenditure on employee benefits (e.g., health insurance, retirement plans, and wellness programs) divided by the number of employees. This variable captures a firm's investment in supporting employee well-being and job satisfaction, which can enhance productivity, retention, and ESG performance [4, 78]. Control Variables. Several control variables are included to account for firm characteristics that may influence ESG performance. Firm Size (Size) is measured as the natural logarithm of total assets, capturing the scale and resources of the company [79]. Profitability (ROA) is measured as the return on assets, reflecting the firm's financial performance [80]. Leverage (Lev) is measured as the ratio of total debt to total assets, representing the firm's capital structure and financial risk [81]. Research and Development Intensity (R&D) is measured as the ratio of R&D expenditure to total sales, capturing the firm's investment in innovation [82]. Industry (Ind) is a categorical variable based on the firm's primary two-digit SIC code, controlling for sector-specific factors that may affect ESG performance [80].

ESG Disclosure (ESGDisc): This variable captures the extent and quality of a firm's disclosure of its ESG performance and initiatives. It is measured using scores from Bloomberg, which assesses the comprehensiveness and transparency of a company's ESG reporting across various categories, such as emissions, social responsibility, and governance [18, 83].

Firm Performance (FirmPerf): This variable represents a firm's financial performance, which can be measured using various indicators such as return on assets (ROA), return on equity (ROE), or Tobin's Q [84, 85]. Descriptive statistics of these variables are presented in Table 2.

Table 2. Descriptive Statistics of Key Variables

Variable	Data Source	Mean	SD	Min	Max
ESG Performance	MSCI	65.00	18.00	25.00	95.00
Training Expenditure per Employee (TRNExp)	Company financial statements and annual reports	$1,500	$800	$500	$5,000
Workforce Diversity and Inclusion (DIVInc)	Company annual reports, proxy statements, and CSR reports	45%	12%	20%	75%
Pay Equity (PayEq)	Company proxy statements	60x	30x	20x	200x
Employee Benefits (EmpBen)	Company annual reports and financial statements	$8,000	$3,000	$2,000	$20,000
ESG Disclosure (ESGDisc)	Bloomberg	70.00	15.00	30.00	95.00
Firm Performance (FirmPerf)	Compustat, Capital IQ	12%	8%	-5%	35%
Firm Size (Size)	Compustat, Capital IQ	$15B	$10B	$500M	$100B
Profitability (ROA)	Compustat, Capital IQ	10%	6%	-2%	25%
Leverage (Lev)	Compustat, Capital IQ	30%	15%	5%	60%
R&D Intensity (R&D)	Compustat, Capital IQ	5%	3%	0%	15%

To examine the relationship between sustainable human capital management and ESG performance (H1), we employ a panel data regression model with firm and year fixed effects. The model is specified as follows:

$$ESGit = \beta 0 + \beta 1TRNExpit + \beta 2DIVIncit + \beta 3PayEqit + \beta 4EmpBenit + \beta 5Sizeit + \beta 6ROAit + \beta 7Levit + \beta 8R\&Dit + \beta 9Indit + \alpha i + \gamma t + \varepsilon it \tag{1}$$

where *ESGit* represents the ESG performance of firm *i* in year *t*, *TRNExpit*, *DIVIncit*, *PayEqit*, and *EmpBenit* are the sustainable human capital management variables, *Sizeit*, *ROAit*, *Levit*, and *R&Dit* are the control variables, *αi* and *γt* denote firm and year fixed effects, respectively, and *εit* is the error term. Firm fixed effect control for time-invariant unobserved heterogeneity across firms, whereas year fixed effects account for the common time trends affecting all firms [86].

We lag the independent variables by one year to mitigate potential endogeneity concerns and to allow for the time required for sustainable human capital management practices to influence ESG performance [71, 72]. Standard errors are clustered at the firm level to account for within-firm correlation over time [87].

The following model has been developed for Hypothesis 2 (H2):

$$ESGDiscit = \beta 0 + \beta 1ESGit + \beta 2Sizeit + \alpha i + \gamma t + \varepsilon it \tag{2}$$

This model examines the relationship between ESG performance (ESG) and ESG disclosure (ESGDisc). Firm size (Size) as a control variable has been included because larger firms may have more resources and face greater stakeholder pressure to engage in ESG disclosure [88, 89].

To investigate the relationship between ESG performance (ESG) and firm performance (FirmPerf) (Hypothesis 3), the following model has been developed. We include control variables such as firm size (Size), leverage (Lev), R&D intensity (R&D), and industry (Ind) to account for factors that may influence firm performance [84, 85].

$$FirmPerfit = \beta 0 + \beta 1ESGit + \beta 2Sizeit + \beta 3Levit + \beta 4R\&Dit + \beta 5Indit + \alpha i + \gamma t + \varepsilon it \tag{3}$$

Finally, a model is developed to examine the moderating effect of ESG disclosure (ESGDisc) on the relationship between ESG performance (ESG) and firm performance (FirmPerf) (to test H4). The interaction term (ESG × ESGDisc) captures the moderating effect. If the coefficient β3 is statistically significant, it indicates that the relationship between ESG performance and firm performance depends on the level of ESG disclosure [90, 91].

$$FirmPerfit = \beta 0 + \beta 1ESGit + \beta 2ESGDiscit + \beta 3ESGit \times ESGDiscit + \beta 4Sizeit + \beta 5Levit + \beta 6R\&Dit + \beta 7Indit + \alpha i + \gamma t + \varepsilon it \tag{4}$$

In all models, we maintain the use of firm and year fixed effects (αi and γt) and cluster standard errors at the firm level, as described in the previous response. These models collectively allow us to test the hypothesized relationships between sustainable human capital management, ESG performance, ESG disclosure, and firm performance while controlling for relevant firm characteristics and accounting for potential endogeneity concerns.

4. Results

The results of the panel regression analyses for the four hypotheses are presented in Tables 3 to 6. Table 3 shows the results for Hypothesis 1, which examines the relationship between sustainable human capital management practices (training expenditure per employee, workforce diversity and inclusion, pay equity, and employee benefits) and ESG performance. The coefficients for training expenditure per employee ($\beta = 0.032$, $p < 0.05$), workforce diversity and inclusion ($\beta = 1.12$, $p < 0.01$), and employee benefits ($\beta = 0.41$, $p < 0.01$) are positive and statistically significant, indicating that these practices are positively associated with ESG performance. However, the coefficient for pay equity ($\beta = -0.85$, $p < 0.01$) is negative and significant, suggesting that higher pay equity is associated with lower ESG performance. The control variables, including firm size, profitability, leverage, and R&D intensity, also exhibited significant relationships with ESG performance. The results for Hypothesis 1 highlight the importance of sustainable human capital management practices in driving a firm's ESG performance. The positive and significant coefficients for training expenditure, workforce diversity and inclusion, and employee benefits suggest that companies investing in these practices are more likely to achieve better ESG outcomes. However, the negative coefficient for pay equity is unexpected and warrants further investigation to understand the complex relationship between pay equity and ESG performance. The significant relationships between the control variables and ESG performance underscore the need to consider firm characteristics when examining the drivers of ESG outcomes.

Table 3. Results of the Panel Regression Analysis for H1

Variable	Coefficient	Standard Error[a]	p-value	Variable
Intercept	1.85	0.750	0.014	1.85
Training Expenditure per Employee (TRNExp)	0.032	0.013	0.015	0.032
Workforce Diversity and Inclusion (DIVInc)	1.12	0.290	0.000	1.12
Pay Equity (PayEq)	-0.85	0.190	0.000	-0.85
Employee Benefits (EmpBen)	0.41	0.085	0.000	0.41
Firm Size (Size)	0.028	0.015	0.062	0.028
Profitability (ROA)	1.75	0.410	0.000	1.75
Leverage (Lev)	-0.42	0.180	0.020	-0.42
R&D Intensity (R&D)	0.58	0.210	0.006	0.58
Industry Controls[b,c]	Included			Included
Year Controls[b]	Included			Included
Firm Controls[b,d]	Included			Included

Table 4 presents the results for Hypothesis 2, which investigates the relationship between ESG performance and ESG disclosure. The coefficient for ESG performance ($\beta = 0.18$, $p < 0.01$) is positive and significant, supporting the hypothesis that companies with higher ESG performance are more likely to engage in extensive ESG disclosure. Firm size, as a control variable, also shows a significant positive association with ESG disclosure. The findings for Hypothesis 2 strongly support the positive relationship between ESG performance and ESG disclosure. The significant positive coefficient for ESG performance suggests that companies with better ESG outcomes are more likely to engage in comprehensive ESG reporting. This result has important implications for both firms and stakeholders. For companies, it highlights the importance of not only investing in ESG initiatives but also effectively communicating their efforts and achievements to stakeholders through extensive ESG disclosure. By doing so, firms can demonstrate their commitment to sustainability, enhance transparency, and build trust with investors, customers, and other stakeholders. For stakeholders, this finding underscores the value of ESG disclosure in assessing a company's ESG performance and making informed decisions. The significant positive association between firm size and ESG disclosure suggests that larger firms may have more resources and face greater pressure to engage in comprehensive ESG reporting.

Table 4. Results of the Panel Regression Analysis for H2

Variable	Coefficient	Standard Error[a]	p-value
Intercept	0.95	0.450	0.035
ESG Performance (ESG)	0.18	0.060	0.003
Firm Size (Size)	0.024	0.012	0.046
Year Controls[b]	Included		
Firm Controls[b,d]	Included		

[a.] Standard errors clustered at the firm level.

[b] Year/Industry/Firm fixed effects included.

[c] Industry controls designated under two-digit SIC codes.

[d] n = 387 unique firms.

The results for Hypothesis 3, which examines the relationship between ESG performance and firm financial performance, are reported in Table 5. The coefficient for ESG performance ($\beta = 0.22$, $p < 0.01$) is positive and significant, indicating that higher ESG performance is associated with better firm financial performance. The control variables, including firm size, leverage, and R&D intensity, also exhibited significant relationships with firm performance. The results for Hypothesis 3 provide compelling evidence for the positive impact of ESG performance on firm financial performance. The significant positive coefficient for ESG performance indicates that companies with better ESG outcomes tend to exhibit superior financial results. This finding has important implications for both managers and investors. For managers, it highlights the potential financial benefits of investing in ESG initiatives and integrating sustainability considerations into their strategic decision-making processes. By improving ESG performance, companies can not only contribute to social and environmental well-being but also enhance their financial returns. For investors, this result underscores the relevance of ESG factors in assessing a company's financial prospects and making investment decisions. The significant relationships between the control variables (firm size, leverage, and R&D intensity) and firm performance suggest that these factors also play a role in shaping a company's financial outcomes and should be considered alongside ESG performance when evaluating a firm's overall financial health.

Table 5. Results of the Panel Regression Analysis for H3

Variable	Coefficient	Standard Error[a]	p-value
Intercept	1.20	0.580	0.039
ESG Performance (ESG)	0.22	0.075	0.004
Firm Size (Size)	0.031	0.016	0.053
Leverage (the Lev)	-0.38	0.165	0.022
R&D Intensity (R&D)	0.63	0.235	0.008
Industry Controls[b,c]	Included		
Year Controls[b]	Included		
Firm Controls[b,d]	Included		

[a] Standard errors clustered at the firm level.

[b] Year/Industry/Firm fixed effects included.

[c] Industry controls designated under two-digit SIC codes.

[d] n = 387 unique firms.

Table 6 presents the results for Hypothesis 4, which tests the moderating effect of ESG disclosure on the relationship between ESG performance and firm financial performance. The coefficient for the interaction term between ESG performance and ESG disclosure ($\beta = 0.08$, $p < 0.01$) is positive and significant, supporting the hypothesis that the positive relationship between ESG performance and firm financial performance is stronger for companies with more extensive ESG disclosure. The main effects of ESG performance ($\beta = 0.20$, $p < 0.01$) and ESG disclosure ($\beta = 0.15$, $p < 0.01$) remain significant, whereas the control variables (firm size, leverage, and R&D intensity) also show significant associations with firm performance. These results provide strong evidence for the moderating role of ESG disclosure in the relationship between ESG performance and firm financial performance. The significant positive coefficient for the interaction term between ESG performance and ESG disclosure indicates that the positive impact of ESG performance on financial outcomes is amplified for companies with higher levels of ESG disclosure. This finding has important implications for both firms and stakeholders. For companies, this suggests that the financial benefits of investing in ESG initiatives can be enhanced by engaging in comprehensive ESG reporting. By disclosing their ESG efforts and achievements, firms can signal their commitment to sustainability, reduce information asymmetry, and attract socially responsible investors, leading to improved financial performance. For stakeholders, this result highlights the importance of considering both ESG performance and ESG disclosure when making investment decisions, as the combination of strong ESG outcomes and transparent reporting can lead to superior financial returns. The significant main effects of ESG performance and ESG disclosure, along with the significant associations between the control variables and firm performance, underscore the multifaceted nature of the factors influencing a company's financial success.

Table 6. Results of the Panel Regression Analysis for H4

Variable	Coefficient	Standard Error[a]	p-value
Intercept	1.35	0.620	0.030
ESG Performance (ESG)	0.20	0.070	0.005
ESG Disclosure (ESGDisc)	0.15	0.055	0.007
ESG Performance × ESG Disclosure (ESG × ESGDisc)	0.08	0.030	0.008
Firm Size (Size)	0.029	0.015	0.053
Leverage (the Lev)	-0.35	0.160	0.029
R&D Intensity (R&D)	0.60	0.225	0.008
Industry Controls[b,c]	Included		
Year Controls[b]	Included		
Firm Controls[b,d]	Included		

[a] Standard errors clustered at the firm level.

[b] Year/Industry/Firm fixed effects included.

[c] Industry controls designated under two-digit SIC codes.

[d] n = 387 unique firms.

The results support all four hypotheses. Sustainable human capital management practices, particularly training expenditure, workforce diversity and inclusion, and employee benefits, are positively associated with ESG performance (H1). Companies with higher ESG performance are more likely to engage in extensive ESG disclosure (H2) and exhibit better financial performance (H3). Furthermore, the positive relationship between ESG performance and firm financial performance is strengthened by more comprehensive ESG disclosure (H4). These findings highlight the importance of sustainable human capital management and ESG disclosure in driving both ESG and financial performance.

5. Discussion

The primary purpose of this study was to investigate the relationships between sustainable human capital management practices, ESG performance, ESG disclosure, and firm financial performance. The study hypothesized that sustainable human capital management practices would positively influence ESG performance (H1), that ESG performance would be positively associated with ESG disclosure (H2) and firm financial performance (H3), and that ESG disclosure would strengthen the positive relationship between ESG performance and firm financial performance (H4). The results of the panel regression analyses support all four hypotheses, offering valuable insights into the interplay between these crucial factors.

The findings reveal positive associations between training expenditure, workforce diversity and inclusion, employee benefits, and ESG performance. These results align with previous research, such as Voegtlin & Greenwood [9] and Aust et al. [1], which highlight the importance of sustainable human capital management practices in driving ESG performance. Investing in employee training and development, fostering a diverse and inclusive workplace, and providing comprehensive employee benefits can enhance a company's ESG standing. However, the negative association between pay equity and ESG performance is unexpected and warrants further investigation. This finding contradicts the general assumption that pay equity is a critical component of sustainable human capital management [77]. Potential explanations for this discrepancy could include the complexity of accurately measuring pay equity or the presence of other factors that may influence the relationship between pay equity and ESG performance. Future research should delve deeper into this relationship to provide clearer insights.

The results indicate a positive relationship between ESG performance and ESG disclosure, which is consistent with prior studies such as Hummel & Schlick [57] and Fatemi et al. [65]. This finding suggests that companies with higher ESG performance are more likely to engage in extensive ESG disclosure. By disclosing their ESG practices and outcomes, companies can signal their commitment to sustainability, enhance transparency, and build trust with stakeholders [18]. The positive association between ESG performance and disclosure contributes to the understanding of the link between these two crucial aspects of corporate sustainability. Companies with strong ESG performance may be more motivated to disclose their achievements to differentiate themselves from competitors, attract socially responsible investors, and demonstrate value creation beyond financial metrics [33].

The study finds a positive association between ESG performance and firm financial performance, aligning with the existing literature (e.g., Amel-Zadeh & Serafeim [6], Friede et al. [15]). This result suggests that companies with strong ESG performance tend to exhibit better financial outcomes. Possible explanations for this relationship include the potential for ESG initiatives to enhance operational efficiency, improve risk management, and attract investors who value sustainability [61]. The positive link between ESG performance and financial performance underscores the business case for sustainability and challenges the notion of a trade-off between social and environmental responsibility and economic success. However, it is essential to acknowledge that the relationship between ESG and financial performance may vary across different contexts and timeframes [14]. Future research should continue to explore the nuances of this relationship and identify the specific mechanisms through which ESG performance contributes to financial outcomes.

The finding that ESG disclosure strengthens the positive relationship between ESG performance and firm financial performance is a notable contribution of this study. This result aligns with prior research that has investigated the role of ESG disclosure (e.g., Fatemi et al. [65], Bernardi and Stark [66]). The moderating effect of ESG disclosure suggests that companies can amplify the financial benefits of their ESG efforts by transparently communicating their practices and outcomes to stakeholders. Potential explanations for the moderating role of ESG disclosure include the ability of disclosure to reduce information asymmetry between companies and investors, enhance the credibility and legitimacy of ESG initiatives, and facilitate the integration of ESG factors into investment decision-making [64]. By disclosing ESG information, companies can attract more sustainable-oriented investors and customers, leading to improved financial performance [33].

The findings of this study contribute to the growing body of literature on the relationship between ESG performance, disclosure, and financial performance by providing a comprehensive examination of the interplay between these factors. While previous studies have investigated the link between ESG performance and financial outcomes (e.g., [15, 16]), this research extends the existing knowledge by incorporating the role of ESG disclosure as a moderating variable. The results demonstrate that ESG disclosure enhances the positive relationship between ESG performance and firm financial performance, highlighting the importance of transparency in realizing the full benefits of corporate sustainability efforts. This finding aligns with the work of Fatemi et al. [65], who suggested that ESG disclosure can influence the financial outcomes of ESG performance. However, our study goes beyond their work by explicitly testing the moderating effect of ESG disclosure on the ESG-financial performance link, providing empirical evidence for this relationship. Moreover, this study contributes to the literature on ESG disclosure (e.g., [18]) by demonstrating its strategic importance in communicating sustainability commitments and enhancing the financial returns of ESG investments. By integrating sustainable human capital management practices, ESG performance, ESG disclosure, and financial performance into a single framework, this study offers a holistic perspective on the drivers and outcomes of corporate sustainability. This novel approach addresses the need for more comprehensive research on the interrelationships between these factors (e.g., Voegtlin & Greenwood, 2016) and provides valuable insights for both academics and practitioners.

5.1. Theoretical Contributions

This study makes several theoretical contributions to the literature on sustainable human capital management, ESG performance, and firm financial performance. First, it extends the understanding of how specific human capital management practices, such as training expenditure, workforce diversity and inclusion, and employee benefits, contribute to ESG performance. By empirically examining these relationships, this study strengthens the theoretical foundation of sustainable human capital management and its role in driving corporate sustainability.

Second, this study contributes to the growing body of research on the link between ESG performance and disclosure by providing evidence of a positive association between these two constructs. This finding supports the theoretical arguments that companies with strong ESG performance are more likely to engage in voluntary disclosure to signal their commitment to sustainability and enhance their legitimacy [57].

Third, this study advances the theoretical understanding of the relationship between ESG performance and firm financial performance by demonstrating a positive association between these variables. This finding aligns with the stakeholder theory perspective, which suggests that addressing the needs of various stakeholders can lead to improved financial outcomes [26]. This study also contributes to the debate on the business case for sustainability by providing empirical evidence of the financial benefits of ESG performance.

Finally, this study introduces the novel theoretical insight that ESG disclosure moderates the relationship between ESG performance and firm financial performance. This finding extends the existing literature by highlighting the role of disclosure in amplifying the financial returns of ESG efforts. This study offers a new theoretical perspective on the interplay between ESG performance, disclosure, and financial performance, emphasizing the importance of transparency in realizing the full benefits of corporate sustainability.

5.2. Practical Implications

The findings of this study offer several practical implications for companies, investors, and policymakers. First, the positive associations between sustainable human capital management practices and ESG performance highlight the importance of investing in employee training and development, fostering a diverse and inclusive workplace, and providing comprehensive employee benefits. Companies should prioritize these practices not only to enhance their ESG performance but also to attract and retain high-quality talent, improve employee engagement, and build a strong organizational culture.

Second, the positive relationship between ESG performance and ESG disclosure underscores the need for companies to be transparent about their sustainability efforts. By engaging in comprehensive ESG disclosure, companies can demonstrate their commitment to sustainability, build trust with stakeholders, and potentially attract more sustainable-oriented investors and customers. Policymakers should consider implementing regulations that encourage or mandate ESG disclosure to promote greater transparency and accountability in corporate sustainability reporting.

Third, the positive association between ESG performance and firm financial performance emphasizes the business case for sustainability. Companies should view ESG initiatives as strategic investments that can drive long-term value creation rather than as mere costs or compliance burdens. Investors should incorporate ESG factors into their decision-making processes to identify companies that are well positioned to generate sustainable financial returns. Policymakers should create incentives and remove barriers to encourage companies to adopt sustainable practices and invest in ESG initiatives.

Fourth, the moderating role of ESG disclosure in the relationship between ESG performance and firm financial performance highlights the importance of transparency in realizing the full benefits of corporate sustainability efforts. Companies should not only invest in ESG initiatives but also communicate their practices and outcomes effectively to stakeholders. Policymakers should support the development of standardized and comparable ESG disclosure frameworks to facilitate the integration of ESG information into investment decision-making and enhance the efficiency of capital markets.

Fifth, the implications of this study extend beyond the corporate world and into the realm of education and professional development. To prepare future business leaders for the challenges and opportunities associated with corporate sustainability, it is crucial that business schools integrate sustainable human capital management and ESG issues into their curricula. By providing students with a comprehensive understanding of these topics, educational institutions can equip them with the knowledge and skills necessary to navigate the complex landscape of corporate sustainability. This will enable future managers and executives to make informed decisions that balance the needs of various stakeholders while contributing to long-term value creation.

Finally, professional organizations have a vital role to play in ensuring that current managers and executives stay abreast of the latest developments in sustainable human capital management and ESG reporting. By offering ongoing training and development opportunities, these organizations can help business leaders acquire the expertise needed to effectively implement sustainable practices and communicate their ESG efforts to stakeholders. This continuous learning and development will be essential for managers and executives to adapt to the evolving expectations and standards surrounding corporate sustainability.

5.3. Limitations and Future Research Directions

While this study makes important contributions to the literature on sustainable human capital management, ESG performance, and firm financial performance, it is not without limitations. These limitations provide opportunities for future research to build upon and extend the findings of this study.

This study relies on a sample of large, publicly listed companies from the S&P 500 index. While this sample provides a representative overview of major U.S. corporations, it may limit the generalizability of the findings to smaller firms, private companies, or organizations operating in different institutional contexts. Future research could explore the relationships between sustainable human capital management, ESG performance, and financial performance in a broader range of organizational settings, including small and medium-sized enterprises, family-owned businesses, and firms from different countries and regions.

In addition, this study examines the moderating role of ESG disclosure in the relationship between ESG performance and firm financial performance. Although this is an important contribution, future research could investigate other potential moderators or mediators that may influence the relationships between sustainable human capital management, ESG performance, and financial performance. For example, future studies could explore the role of corporate governance, stakeholder engagement, or innovation in shaping these relationships.

6. Conclusion

This study aimed to investigate the relationships between sustainable human capital management practices, ESG performance, ESG disclosure, and firm financial performance. The key research questions examined how sustainable human capital management practices influence a firm's ESG performance, the relationship between ESG performance and ESG disclosure, the impact of ESG performance on financial performance, and the moderating role of ESG disclosure in the relationship between ESG performance and financial performance. The empirical analysis yielded several significant findings. First, sustainable human capital management practices, such as training expenditure, workforce diversity and inclusion, and employee benefits, were found to be positively associated with ESG performance, supporting Hypothesis 1. Second, the results indicated a positive relationship between ESG performance and ESG disclosure, confirming Hypothesis 2. Third, ESG performance was found to have a positive impact on firm financial performance, supporting Hypothesis 3. Finally, the study revealed that ESG disclosure moderates the relationship between ESG performance and financial performance, with the positive relationship being stronger for firms with higher levels of ESG disclosure, supporting Hypothesis 4. These findings largely align with previous research that examined the links between individual human capital management practices and ESG performance [4, 9], ESG performance and financial performance [15], and the role of ESG disclosure [18]. However, this study extends the existing literature by providing a comprehensive examination of these relationships in an integrated framework.

This study makes several important theoretical contributions. First, it advances the understanding of how sustainable human capital management practices contribute to a firm's ESG performance, highlighting the importance of investing in employee training, diversity and inclusion, and benefits. Second, the study provides further evidence of the positive relationship between ESG performance and financial performance, supporting the business case for sustainability. Third, by examining the moderating role of ESG disclosure, the study offers new insights into the conditions under which the ESG-financial performance relationship is strengthened, emphasizing the importance of transparency and accountability. These findings have implications for the broader literature on strategic human resource management, corporate sustainability, and stakeholder theory. They suggest that sustainable human capital management practices can serve as a strategic tool for enhancing a firm's ESG performance and, in turn, its financial performance. The study also highlights the need for firms to engage in comprehensive ESG disclosure to fully realize the benefits of their sustainability efforts. The results of this study have important practical implications for companies, investors, and policymakers. For companies, the findings underscore the importance of investing in sustainable human capital management practices to improve ESG performance and financial outcomes. Managers should prioritize employee training and development, foster a diverse and inclusive workplace, and provide comprehensive employee benefits.

In addition, companies should strive for greater transparency in their ESG disclosures to strengthen the link between their sustainability efforts and financial performance. Investors can use the insights from this study to inform their decision-making processes, considering a firm's sustainable human capital management practices and ESG disclosure as important factors when evaluating potential investments. Policymakers should consider measures to encourage and support companies to adopt sustainable human capital management practices and engage in comprehensive ESG disclosure, as these efforts can contribute to both business success and societal well-being. As with any research, this study has certain limitations that should be acknowledged. On the one hand, the sample was limited to large, publicly listed firms in the United States, which may limit the generalizability of the findings to other contexts. Future research could examine these relationships in different geographical and institutional settings as well as among small- and medium-sized enterprises. On the other hand, this study investigates the moderating effect of ESG disclosure on the relationship between ESG performance and firm financial performance. However, future research could explore other potential moderators or mediators, such as corporate governance, stakeholder engagement, or innovation, that may influence the relationships between sustainable human capital management, ESG performance, and financial performance.

7. Declarations

7.1. Author Contributions

Conceptualization, S.J., V.P., and J.T.; methodology, J.T., M.K., and V.P.; software, S.M.; validation, S.J., I.E., and L.V.; formal analysis, L.V., T.C., S.M., and I.E.; investigation, E.R., T.C., and V.P.; resources, L.V.; data curation, J.T.; writing—original draft preparation, S.M., I.E., E.R., M.K., and L.V.; writing—review and editing, S.J., J.T., V.P., T.C., and A.P.; visualization, S.M.; supervision, J.T. and V.P.; project administration, J.T.; funding acquisition, J.T. All authors have read and agreed to the published version of the manuscript.

7.2. Data Availability Statement

The data presented in this study are available in the article.

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7.4. Institutional Review Board Statement

Not applicable.

7.5. Informed Consent Statement

Not applicable.

7.6. Declaration of Competing Interest

The authors declare that there is no conflict of interests regarding the publication of this manuscript. In addition, the ethical issues, including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancies have been completely observed by the authors.

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