A Multi-Level Perspective on the Role of Top Management Characteristics and Governance Mechanisms in Shaping the Twin Transformation of Firms

Dissertation

zur Erlangung des Grades eines Doktors der Wirtschaftswissenschaft

der Rechts- und Wirtschaftswissenschaftlichen Fakultät

der Universität Bayreuth

vorgelegt

von

Annina Ahrens

aus

Bayreuth

Dekan:	Prof. Dr. Claas Christian Germelmann
Erstberichterstatter:	Prof. Dr. Reinhard Meckl
Zweitberichterstatter:	Prof. Dr. Friedrich Sommer
Tag der mündlichen Prüfung:	28.01.2026

“My father always used to say, 'Don’t raise your voice. Improve your argument.'

Good sense does not always lie with the loudest shouters, nor can we say that a large, unruly crowd is always the best arbiter of what is right.”

— Desmond Tutu

Danksagung

Zu Beginn möchte ich allen danken, die mich während der Erstellung dieser Dissertation unterstützt und begleitet haben.

Mein besonderer Dank gilt meinem Doktorvater Prof. Dr. Reinhard Meckl. Ich danke Ihnen für das Vertrauen, das Sie in mich gesetzt haben, dafür, dass Sie mir die Stelle am Lehrstuhl ermöglicht haben, und für Ihre Begleitung auf dem Weg meiner Dissertation. Vielen Dank für Ihre wertvollen Ideen, Ihre Unterstützung und dafür, dass Sie mich stets in die richtigen Bahnen gelenkt haben, wenn ich einmal vom Weg abzukommen drohte.

Ebenso möchte ich meinen ehemaligen Kollegen am Lehrstuhl danken. Mein besonderer Dank gilt Dr. Tim Heubeck. Ich kann wirklich sagen, dass du mein Mentor warst, der mich in allen Phasen der Dissertation unterstützt hat. Vielen Dank für alles, was ich von dir lernen durfte. Ich wünsche dir auf deinem weiteren Weg alles Gute!

Zudem danke ich meinen Kollegen und Kolleginnen Dr. Annkathrin Thalenhorst, Dr. Franziska Götz, Dr. Ruben Just und Petra Valentin. Ohne euch wäre ich damals nicht als studentische Hilfskraft an den Lehrstuhl gekommen, und ohne euch hätte sich diese große Chance für mich nicht ergeben. Ihr habt diese Zeit am Lehrstuhl für mich unvergesslich gemacht und ich bin unglaublich glücklich euch als Kolleginnen und Vorbilder gehabt zu haben.

Des Weiteren bedanke ich mich bei meinen studentischen Hilfskräften, Sonja Schodder und Mona Günder, die mich ebenfalls tatkräftig bei meiner Arbeit am Lehrstuhl unterstützt haben.

Zudem danke ich auch meinem ehemaligen Kollegen am Lehrstuhl Patrick Held. Auch wenn unsere Zusammenarbeit nur kurz war, bin ich froh für die gemeinsame Zeit und den regen Austausch, den wir hoffentlich weiterhin fortführen werden. Für deine Promotion wünsche ich dir weiterhin viel Energie, spannende Erkenntnisse und Freude an deiner Arbeit.

Ein großer Dank gehört zudem meiner Familie, meinen Eltern und Großeltern, meiner Schwester, meinen Freunden und meinem Freund Tim. Danke für eure bedingungslose Unterstützung, für eure immer ehrlichen Worte, fürs Zuhören und Aufmuntern.

Ich widme diese Arbeit meinen Eltern, Simone und Marko.

Acknowledgements

In preparing this dissertation, the author made use of digital tools such as ChatGPT and Grammarly for translation and language refinement. The author takes full responsibility for the originality and content of the work.

Abstract

The world's population is facing a multitude of environmental and social challenges, such as global warming, climate change, and social divisions within society. Since these challenges affect individuals, communities, and businesses alike, firms have become key actors in addressing them. Against the backdrop of rising societal demands for more sustainable corporate behavior, businesses have increasingly recognized the potential of digital technologies to address grand societal challenges. Businesses are therefore challenged to embed sustainability into their corporate strategies while simultaneously advancing digital transformation, both to address societal objectives and to secure a competitive edge. The simultaneous pursuit of the sustainable and digital transformation—referred to as twin transformation—holds the potential for substantial synergies but also poses considerable managerial and organizational challenges for the top management.

The aim of this study is to examine which individual characteristics and capabilities of top management influence decision-making. Drawing on five research papers, this thesis provides insights into how managerial characteristics, governance structures, and managerial cognition shape firms' engagement in sustainability and digital transformation. The studies examine factors such as chief executive officer (CEO) political ideology, founder status, and elite education, as well as governance mechanisms like corporate social responsibility (CSR) committees and board gender diversity, and their impact on firms' environmental, social, and governance (ESG) performance. Moreover, the role of managerial cognition in bridging digital technology adoption and competitive advantage in Small and medium-sized enterprises (SMEs) is analyzed. A systematic literature review further advances the emerging field of twin transformation by identifying key enablers at the top management level, thereby offering practical guidance for managers in effectively steering this dual transformation.

This thesis contributes to the literature on twin transformation in several ways. First, it moves beyond demographic characteristics and examines more deeply rooted personal values of CEOs to analyze the influence that top management exerts on the sustainable and digital transformation of firms. Second, it highlights the interplay between different governance bodies, such as the CEO, the top management team, and the board of directors, acknowledging that strategic decisions at the top are made collectively and shaped by multiple perspectives. In doing so, the thesis adopts a multi-level approach to understanding firm transformations. Therefore, the study also draws on several management theories, such as upper echelons theory

(UET) and the resource-based view (RBV), to explain decision-making in the context of firm transformations. In addition, it engages with seemingly opposing perspectives, including agency theory and stewardship theory, to evaluate which theoretical lenses are most suitable for analyzing sustainable and digital transformations. Third, this thesis examines the emerging field of twin transformation by drawing on research from both the sustainability and digitalization domains, integrating their findings and applying them to the twin transformation context. In doing so, it provides valuable insights into how top management influences twin transformation and offers guidance for managers navigating the dual pursuit of digital and sustainable transformations in order to enhance competitiveness in firms and contribute to addressing societal challenges.

Zusammenfassung

Die Weltbevölkerung erlebt eine Vielzahl an sozialen Herausforderungen und Umweltveränderungen wie globale Erwärmung, Klimawandel und soziale Spaltungen innerhalb der Gesellschaft. Da diese Herausforderungen sowohl Individuen, ganze Bevölkerungsgruppen als auch Unternehmen betreffen, sind zudem Unternehmen zu zentralen Akteuren bei deren Bewältigung geworden. Vor dem Hintergrund, dass die Gesellschaft zunehmend nach einem nachhaltigeren und zukunftsorientierten Handeln der Unternehmen verlangt, haben diese zunehmend das Potenzial digitaler Technologien erkannt, um große gesellschaftliche Herausforderungen zu bewältigen. Unternehmen sind daher gefordert, Nachhaltigkeit in ihre Unternehmensstrategien einzubetten und gleichzeitig die digitale Transformation voranzutreiben. Somit können Unternehmen dazu beitragen, gesellschaftliche Ziele zu verwirklichen, als auch sich selbst einen Wettbewerbsvorteil zu sichern. Die gleichzeitige Verfolgung der Nachhaltigkeits- und der digitalen Transformation wird auch als Twin Transformation bezeichnet und birgt das Potenzial erheblicher Synergien. Jedoch stellt die Twin Transformation die Geschäftsleitung eines Unternehmens auch vor beträchtliche organisatorische Hürden sowie Führungsherausforderungen.

Ziel dieser Dissertation ist es, zu untersuchen, welche individuellen Eigenschaften und Fähigkeiten der Mitglieder der Unternehmensleitung die Entscheidungsfindung beeinflussen. Aufbauend auf fünf Forschungsarbeiten liefert diese Dissertation Einblicke, wie Managementcharakteristika, Governance-Strukturen und Management-Kognition das Engagement von Unternehmen in Nachhaltigkeit und digitaler Transformation prägen. Die Studien untersuchen zum einen Faktoren wie die politische Ideologie des Chief Executive Officers (CEO), den Gründerstatus und die Eliteausbildung der Unternehmensleitung. Zudem werden Governance-Mechanismen wie Ausschüsse des Aufsichtsrates, Geschlechtervielfalt im Vorstand und deren Einfluss auf die Leistung in den Bereichen Umwelt, Soziales und Unternehmensführung von Unternehmen diskutiert. Darüber hinaus wird die Rolle der Kognition von Führungskräften bei der Einführung digitaler Technologien zur Erreichung von Wettbewerbsvorteil in kleinen und mittleren Unternehmen analysiert. Ein systematischer Literaturüberblick betrachtet das aufkommende Forschungsfeld der Twin Transformation und entwickelt dieses weiter. Indem zentrale Erfolgsfaktoren auf Ebene der Unternehmensleitung identifiziert werden, soll dies eine praktische Orientierung für Führungskräfte bieten, um die gleichzeitige nachhaltige und digitale Transformation effektiv zu steuern und zu bewältigen.

Diese Dissertation trägt in mehrfacher Hinsicht zur Diskussion über Twin Transformation in der akademischen Literatur bei. Erstens geht die Untersuchung in dieser Arbeit über demografische Merkmale von Führungskräften hinaus und analysiert tiefer verwurzelte persönliche Werte von CEOs, um den Einfluss der Unternehmensleitung auf die Nachhaltigkeits- und digitale Transformation von Unternehmen zu analysieren. Zweitens hebt die Arbeit das Zusammenspiel zwischen verschiedenen Governance-Organen, wie dem CEO, dem Aufsichtsrat und dem Vorstand, hervor. Zudem erkennt die Arbeit an, dass strategische Entscheidungen an der Unternehmensspitze kollektiv getroffen und von mehreren Perspektiven geprägt werden. Damit verfolgt die Dissertation einen mehrdimensionalen Ansatz zum Verständnis von Unternehmenstransformationen. Daher stützt sich die Studie auch auf mehrere Managementtheorien, wie die Upper-Echelons-Theorie und den Resource-Based View, um die Entscheidungsfindung im Kontext von Unternehmenstransformationen zu beleuchten. Darüber hinaus setzt sich die Arbeit mit scheinbar gegensätzlichen Perspektiven auseinander, darunter die Agency-Theorie und die Stewardship-Theorie, um zu bewerten, welche theoretischen Ansätze sich am besten zur Analyse von Nachhaltigkeits- und digitaler Transformation eignen. Drittens untersucht diese Dissertation das aufkommende Forschungsfeld der Twin Transformation, indem sie Forschungsergebnisse sowohl aus dem Nachhaltigkeits- als auch aus dem Digitalisierungsbereich aufgreift, integriert und auf den Kontext der Twin Transformation anwendet. Damit liefert die Arbeit wertvolle Erkenntnisse, welchen Einfluss die Unternehmensführung auf die Twin Transformation nimmt. Darüber hinaus bieten die Ergebnisse Orientierung für die Unternehmensleitung, die die gleichzeitige Verfolgung von der digitalen und nachhaltigen Transformation steuert. Somit soll die Wettbewerbsfähigkeit von Unternehmen gesteigert werden und zur Bewältigung gesellschaftlicher Herausforderungen beitragen.

Table of contents

Danksagung ... **III**

Acknowledgements ... **V**

Abstract ... **VI**

Zusammenfassung ... **VIII**

List of Figures ... **XIII**

List of Tables ... **XIV**

List of Abbreviations ... **XV**

Index of Research Papers ... **XVII**

Chapter 1 Introduction ... **1**

1.1 Motivation and Research Context ... 1

1.2 Thesis Structure and Overview of Research Papers ... 4

1.3 Overview of Research Papers ... 4

Chapter 2 Theoretical Background ... **10**

2.1 Firm Transformations ... 10

2.1.1 Sustainability Transformation ... *10*

2.1.2 Digital Transformation ... *13*

2.1.3 Twin Transformation ... *15*

2.2 Top Management and Governance in Firms ... 17

2.2.1 Overview of Theories in Top Management Literature ... *17*

2.2.2 Selected Theories of Top Management and Governance in Research ... *21*

2.3 References ... 26

Chapter 3 Research Paper 1: Slack resources for ESG performance ... **47**

3.1 Introduction ... 48

3.2 Theory Background and Hypotheses Development ... 52

3.2.1 Slack Resources and ESG Performance ... *52*

3.2.2 Moderating Effect of CSR Committee *54*

3.3 Method 55

3.3.1 Sample Selection and Data Collection *55*

3.3.2 Variable Measurement *56*

3.4 Analysis and Results 57

3.4.1 Descriptive Statistics and Correlations *57*

3.5 Statistical Procedure and Hypothesis Test Results 58

3.6 Additional and Robustness Tests 62

3.6.1 Nonlinear Slack Effect *62*

3.6.2 Slack Resource Dimensions *64*

3.6.3 ESG Pillars *64*

3.6.4 Excluding Industries *65*

4.6.5 Exclude the COVID-19 Years *66*

3.6.6 More Conservative Control Variables *69*

3.6.7 Endogeneity Assessment *69*

3.7 Discussion 73

3.7.1 Slack Resources and ESG *73*

3.7.2 Contingency Role of the CSR Committee *74*

3.7.3 Managerial Implications *76*

3.7.4 Limitations and Future Research *77*

3.7.5 Conclusion and Contributions to Business Ethics *78*

3.8 References 81

Chapter 4 Research Paper 2: CEO's political ideology and ESG 94

4.1 Introduction 95

4.2 Theoretical Background and Hypothesis Development 98

4.2.1 CEO Political Ideology and ESG Performance *98*

4.2.2 Moderating Role of Ivy League Education *101*

4.3 Research Methodology 103

4.3.1 Data Collection *103*

4.3.2 Variable Measurements *104*

4.3.2.1 Study Variables 104
4.3.2.2 Control Variables 108

4.4 Analysis Method and Results 113
4.4.1 Main Results *113*
4.4.2 Additional Analyses *114*
4.4.2.1 Endogeneity Analyses 114
4.4.2.2 ESG Pillar Scores Analyses 116
4.4.2.3 Robustness Analyses 122

4.5 Discussion and Implications 126
4.5.1 Practical Recommendations *129*
4.5.2 Future Research *130*

4.6 References 134

Chapter 5 Research Paper 3: Top Management as an Enabler of Firms' Twin Transformation 154

Chapter 6 Research Paper 4: Influence of CEO founder status on ESG performance 155

Chapter 7 Research Paper 5: The Missing Link in SMEs' Digital Transformation 156

Chapter 8 Conclusion 157

8.1 Synthesis of Key Findings across Papers 157

8.2 Contributions to Theory and Strategic Management 160

8.3 Practical Implications for Firms and Policymakers 161

8.4 Limitations and Avenues for Future Research 162

8.5 Concluding Reflections 164

8.6 References 166

List of Figures

Figure 1 Overview of Research Papers 5

Figure 2 ESGC Framework - Composition of ESG scores 12

Figure 3 Twin Transformation: The Synergies of Digital and Sustainable Transformation ... 16

List of Tables

Table 1 Index of Research Papers with Status and Journal Rankings XVII

Table 2 Overview of Theories 19

List of Abbreviations

AI	Artificial Intelligence
CDO	Chief Digital Officer
CEO	Chief Executive Officer
CO_2	Carbon Dioxide
CSO	Chief Sustainability Officer
CSR	Corporate Social Responsibility
CTO	Chief Technology Officer
DMC	Dynamic Managerial Capabilities
ESG	Environmental, Social, and Governance
ESGC	Environmental, Social, Governance, and Controversies
EU	European Union
GSC	Grand Societal Challenges
HR	Human Resources
IoT	Internet of Things
KLD	Kinder, Lydenberg, Domini
MSCI	Morgan Stanley Capital International
PRI	Principles for Responsible Investment
RBV	Resource-based View
S&P	Standard and Poor‘s
SDG	Sustainable Development Goals
SJR	Scimago Journal Ranking
SMACIT	Social, Mobile, Analytics, Cloud, Internet of Things
SME	Small and medium-sized enterprises
TMT	Top Management Team

UET	Upper Echelons Theory
US	United States
VHB	Verband der Hochschullehrer*innen für Betriebswirtschaftslehre

Index of Research Papers

Table 1 Index of Research Papers with Status and Journal Rankings

Index	Title	Authors	Publication	Status	Journal rankings	
Research Paper 1	Governing the Responsible Investment of Slack Resources in Environmental, Social, and Governance (ESG) Performance: How Beneficial are CSR Committees?	Heubeck, Tim & Ahrens, Annina	*Journal of Business Ethics*	Published in 2024	SJR Impact factor (2023) Five-year impact factor VHB-JOURQUAL3 H-Index	Q1/3.039 5.9 8.0 B 277
Research Paper 2	Sustainable by Ideology? The Influence of CEO Political Ideology and Ivy League Education on ESG (Environmental, Social, and Governance) Performance	Heubeck, Tim & Ahrens, Annina	*Business Strategy and the Environment*	Published in 2025	SJR Impact factor (2023) VHB-JOURQUAL3 H-Index	Q1/3.609 12.5 B 173
Research Paper 3	Top Management as an Enabler of Firms' Sustainable and Digital Transformation: A Literature Review and Research Agenda for Twin Transformation	Ahrens, Annina & Heubeck, Tim	*International Journal of Innovation Management*	Published in 2025	SJR Impact factor (2023) VHB-JOURQUAL3 H-Index	Q2/ 0.432 1.3 B 61

Index	Title	Authors	Publication	Status	Journal Ranking
Research Paper 4	Directing the Visionary: Governance Mechanisms and Corporate ESG Performance under Founder-CEO Leadership	Ahrens, Annina & Heubeck, Tim	Scientific journal	Under review	Not applicable
Research Paper 5	The Missing Link in SMEs' Digital Transformation: How Business Model Innovation Bridges Digital Technology Adoption and Competitive Advantage	Ahrens, Annina; Heubeck, Tim; Held, Patrick & Meckl, Reinhard	Scientific journal	Working Paper	Not applicable

Chapter 1 Introduction

1.1 Motivation and Research Context

Grand societal challenges (GSCs) are cross-border problems or crises that negatively affect large parts of the global population as well as the environment as a whole (Voegtlin et al., 2022). Examples include climate change, extreme weather events, migration flows, political instability, and inequality, which are issues that cannot be solved in isolation but require collective and coordinated action (Drori et al., 2025; George et al., 2016). Since these challenges affect individuals, communities, and businesses alike, firms have become key actors in addressing them. On the one hand, companies are responsible for a considerable share of environmental degradation, particularly in the manufacturing sector (Uddin, 2020; Yan & Fang, 2015), while on the other, they serve as crucial engines of innovation (Pricopoaia et al., 2025; Scherer & Voegtlin, 2020). Consequently, this thesis argues that sustainability has become a central dimension of corporate behavior and must be embedded into both corporate strategy and core operations, while innovative digital technologies can serve as enablers in addressing these GSCs (Agyemang et al., 2025; Qadri et al., 2025). However, there remains a lack of guidance for policymakers and firm managers, a gap that management research should take seriously and address by providing more systematic investigation (Guandalini, 2022; Qadri et al., 2025).

The simultaneous pursuit of digital and sustainability initiatives in firms is called Twin Transformation (Burinskienė & Nalivaikė, 2024). It is based on the idea that digital and sustainability transformations complement and reinforce each other (Christmann et al., 2024). The digital transformation can enable the sustainability transformation, for example, by using digital technologies to comply with CO_2 standards. Conversely, the sustainability transformation can guide the direction of digital transformation by using sustainability goals as drivers of innovation in the development of novel digital technologies (Burinskienė & Nalivaikė, 2024; Shang et al., 2023).

Twin transformation remains an emergent field of research for which no generally accepted definition has yet been established. Consequently, the concept is still scarcely represented in academic literature, which complicates systematic inquiry in this area. While numerous studies address the relationship between sustainability and digitalization, they do so without explicitly invoking the term twin transformation. Recent studies examine, for example, how digital technologies can be leveraged to deal with sustainability challenges and how digital

transformation can foster sustainable innovations to tackle global issues (Pricopoaia et al., 2025; Qadri et al., 2025; S. Wang & Zhang, 2025).

There are increasingly strict regulations regarding sustainability and environmental awareness, especially in the manufacturing industry, as it is often highly energy- and emissions-intensive (Ishak & Hashim, 2015; Napp et al., 2014). However, firms face pressure from institutions that impose regulations or standards, and also from stakeholders such as customers, who demand a more sustainable approach from firms (Nirmal et al., 2023). In the context of sustainability transformation, firms prioritize not short-term financial gains, but the long-term balancing of economic, social, and environmental objectives to ensure their future viability (Lozano et al., 2015).

In order to leverage the synergies between the two transformations, they must be planned and managed jointly. Accordingly, they need to be embedded in the firm's overall strategy, as they exert a profound influence on strategic direction. Since strategic decision-making falls within the domain of top management (Papadakis & Barwise, 2002; Wrede et al., 2020), the responsibility for driving twin transformation rests with them, requiring a top-down implementation throughout the organization.

This thesis is based on upper echelons theory, which posits that top executives' beliefs and values exert a significant influence on organizational decision-making (Hambrick, 2007; Hambrick & Mason, 1984). Recent studies on top management provide evidence that managerial characteristics and capabilities shape decision-making in the context of sustainability and digital transformation (He & Gan, 2025; Mahran & Elamer, 2024). Previous research has already examined various factors that affect the decision-making of top managers, particularly focusing on demographics such as tenure (P. Xu et al., 2022), gender (Huang, 2013), age (Shahab et al., 2020), and background (Hu et al., 2023) to influence sustainability or digital transformation. This thesis extends prior research by moving beyond the examination of conventional managerial characteristics and instead focusing on more personal attributes, such as political orientation and elite education. These dimensions capture the underlying norms, values, and attitudes that guide managerial decision-making more comprehensively and thus allow for a more nuanced understanding of their influence on twin transformation.

Moreover, it can be observed that top managers rarely make decisions in isolation and are influenced not only by intrinsic factors but also by external forces. In particular, various governance structures have a significant impact on decision-making. The relationship with the board of directors, which is responsible for advising and monitoring the CEO, plays a significant role and must be considered in any analysis of executive decision-making (Hillman

& Dalziel, 2003). Therefore, this thesis also examines the influence of governance in the context of digital and sustainability transformation. It specifically addresses the question of whether a CEO sees themselves as a steward of the company (Davis et al., 1997), a perspective that may be more prevalent among founders, or whether agency theory is more applicable, suggesting that the CEO should be more closely monitored by governance bodies (Jensen & Meckling, 1976).

The aim of this study is to analyze the influence of top management and governance mechanisms on the sustainability and digital transformation of firms. This thesis examines the emerging field of twin transformation by drawing on research from both the sustainability and digitalization domains, integrating their findings and applying them to the twin transformation context. Moreover, the study moves beyond demographic characteristics and examines more deeply rooted personal values of CEOs to analyze the influence that top management exerts on the sustainability and digital transformation of firms. There is a gap in the literature regarding the interplay between top management and the board of directors. This thesis addresses this gap by acknowledging that strategic decisions at the top are made collectively and are shaped by multiple perspectives. Therefore, this thesis adopts a multi-level perspective on top management by examining how different governance actors—CEOs and founders, the top management team, and the board of directors—along with their characteristics, backgrounds, and capabilities, shape firms' sustainability and digital transformation. Hence, the thesis provides valuable insights into how top management influences twin transformation and offers guidance for managers navigating the dual pursuit of digital and sustainability transformations in order to enhance competitiveness in firms and contribute to addressing societal challenges. Against this background, the following research questions are derived:

RQ 1: *What is the relationship between individual managerial characteristics and the digital and sustainability transformations within firms, and how do these characteristics shape the course of these transformations?*

RQ 2: *In what ways do governance mechanisms influence the digital and sustainability transformations within firms?*

RQ 3: *Can top management drive the twin transformation of firms?*

This thesis addresses the research questions across five individual research papers, which are explicitly explained in the following chapters. By answering these questions, the thesis contributes to the literature on twin transformation and adds to the ongoing debate about which managerial characteristics influence decision-making. Furthermore, the study advances

governance theories and provides valuable guidance to practitioners and managers on how to guide a firm's twin transformation.

1.2 Thesis Structure and Overview of Research Papers

The following thesis contains eight chapters and is structured as follows: Chapter 1 outlines the motivation for the study and introduces the research context. It highlights the relevance of studying the twin transformation, identifies existing research gaps, and presents the research questions. The chapter concludes with the thesis structure and an overview of the five research papers. Chapter 2 then discusses the theoretical foundations of the thesis. First, it provides an overview of different types of firm transformation, namely sustainability transformation, digital transformation, and twin transformation. After that, it examines the management theories applied in this thesis. It first introduces the overall theoretical framework and then elaborates on five selected theories to establish a common conceptual understanding. Chapters 3 to 7 present the five research papers. Research Papers 1, 2, and 4 focus on sustainability, particularly on how top management characteristics and governance mechanisms affect firms' ESG performance. In addition, Research Paper 1 addresses corporate slack resources and the extent to which they are employed for sustainability initiatives. Research Paper 3 is a literature review on twin transformation, with a specific focus on the role of top management in shaping this form of corporate transformation. It also identifies prevailing research gaps and formulates new research questions, thereby providing avenues for future research. Research Paper 5 turns to digital transformation, examining the relationship between the adoption of digital technologies, firm competitiveness, and business model innovation.

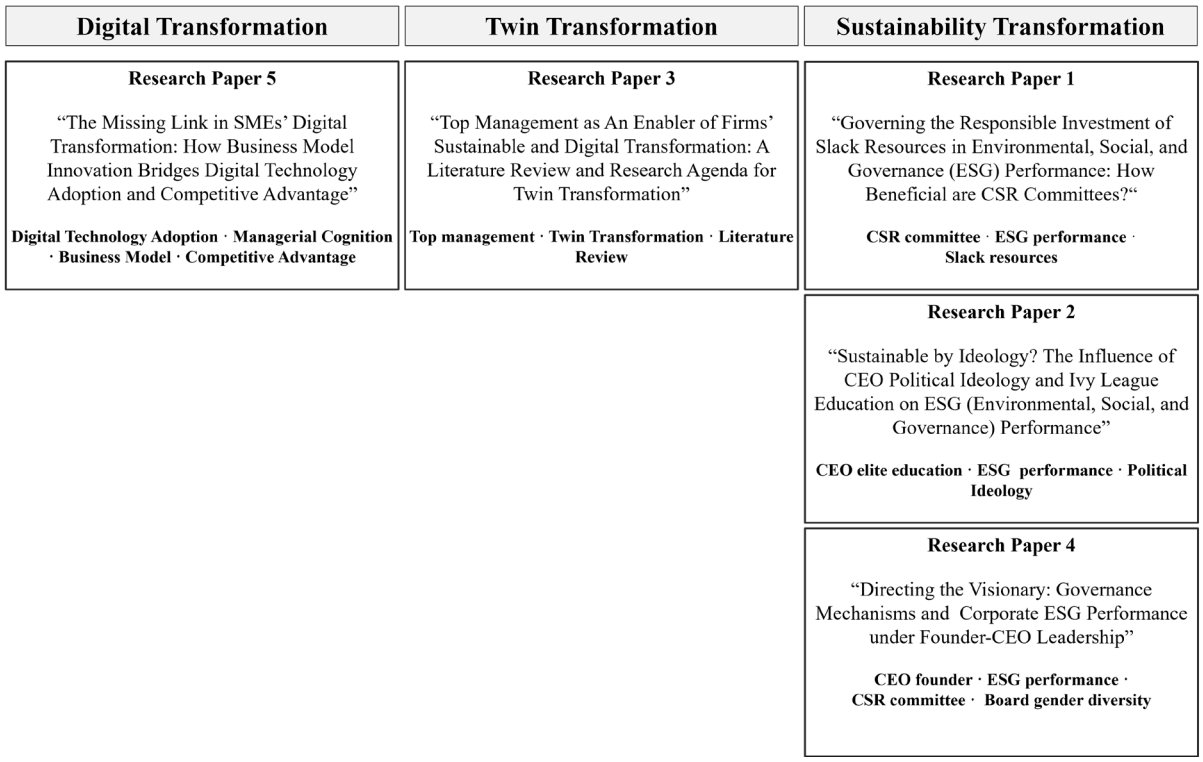
Chapter 8 provides an overview of the thesis findings, highlights their implications for theory and practice, and outlines avenues for further research, including the study's limitations. The thesis ends with a final concluding statement. Figure 1 provides an overview of the research papers.

1.3 Overview of Research Papers

Taken together, the findings of the five research papers provide an overview of the current state of research on the novel concept of twin transformation. The research papers also offer insights into the influence of top management characteristics and governance mechanisms on firms' digital and sustainability transformations. Figure 1 provides a graphical overview of the three dimensions (1) digital transformation, (2) twin transformation, and (3) sustainability

transformation, and illustrates how the five research papers are categorized within these themes. It also offers a brief overview of the titles and keywords of each paper.

Figure 1 Overview of Research Papers



Source: own representation

The first research paper (chapter 3) of this thesis, entitled "Governing the Responsible Investment of Slack Resources in Environmental, Social, and Governance (ESG) Performance: How Beneficial are CSR Committees?", was published in the *Journal of Business Ethics*.

The underlying proposition of the paper is that ESG initiatives, while increasingly demanded by numerous stakeholders (Fatima & Elbanna, 2023), remain risky investments as they do not necessarily generate higher returns (Lu et al., 2023). Consequently, managers tend to allocate slack resources to such initiatives, as these are typically reserved for riskier or more innovative endeavors (Lu et al., 2023; Nohria & Gulati, 1996). The paper further argues that the presence of a CSR committee may influence managers to channel slack resources into enhancing a firm's ESG performance (Gill, 2008; Radu & Smaili, 2022). Building on stakeholder theory, it posits that investing slack resources in ESG enables firms to respond to stakeholder demands for greater sustainability while balancing the interests of both shareholders and stakeholders (Chams & García-Blandón, 2019; Lu et al., 2023). CSR committees are conceived as governance mechanisms designed to support top management in making sustainability-related

decisions (Burke et al., 2019; García-Sánchez et al., 2019). Nevertheless, the literature questions whether CSR committees genuinely fulfill this role or whether they are primarily symbolic (Chams & García-Blandón, 2019). To address this issue, the research model incorporates slack resources as an independent variable and ESG performance as the dependent variable, with CSR committee presence as a moderator, analyzing its potential influence on the relationship between slack resources and ESG. The paper thus seeks to answer the following research questions (RQs):

RQ 1: Are slack resources drivers or barriers to ESG performance?

RQ 2: How does the presence of a CSR committee influence the relationship between slack resources and ESG?

The results of this study suggest a complex, non-linear association between slack resources and ESG performance. While additional resources can initially facilitate improvements in ESG outcomes, an overabundance of such resources appears to undermine performance once a critical level is surpassed. With regard to CSR committees, the analysis finds no support for the assumption that they enhance this relationship. In particular, they do not prevent the downsides that arise when slack resources become excessive. Taken together, these findings provide important guidance for managerial practice, highlighting the need for a balanced approach when allocating slack resources to sustainability-oriented initiatives.

This research paper is authored by Tim Heubeck and Annina Ahrens. Tim Heubeck was responsible for conceptualization/theory, data collection and analysis, methodology, original draft writing, and the review and editing stages. Annina Ahrens contributed to the conceptual framing of the study and participated in both the drafting and writing, as well as in the critical revision and substantive editing of the manuscript.

The second research paper in Chapter 4 is titled “Sustainable by Ideology? The Influence of CEO Political Ideology and Ivy League Education on ESG (Environmental, Social, and Governance) Performance” and was published in *Business Strategy and the Environment*.

Based on the upper echelons theory, this research paper argues that the inherently individual characteristics of managers shape their decision-making regarding ESG initiatives (Hambrick, 2007; Hambrick & Mason, 1984). Specifically, it examines the influence of CEO political identification on firms’ ESG performance, proposing that liberal CEOs are more likely to invest in ESG initiatives than their conservative counterparts (Jost & Amodio, 2012; Y. A. Kim, 2024). In addition, the study considers CEOs’ educational backgrounds by analyzing whether

education at Ivy League institutions affects their ESG-related decision-making (Miller et al., 2015). The hypotheses posit that (1) firms led by liberal CEOs demonstrate higher ESG performance and (2) Ivy League education strengthens the relationship between CEO political ideology and ESG performance. Since educational backgrounds are known to influence managerial decision-making, the study suggests that Ivy League education may provide CEOs with networks and leadership qualities that strengthen their orientation toward ESG (Chou et al., 2015; Miller et al., 2015).

Drawing on a dataset of S&P 900 manufacturing firms, the study finds empirical support for the first hypothesis, showing that firms led by liberal-leaning CEOs exhibit stronger ESG performance than those headed by conservative CEOs. By contrast, the second hypothesis is not supported, as the results suggest that an Ivy League background does not significantly influence the relationship between political ideology and ESG outcomes. Instead, Ivy League education itself emerges as a distinct factor, exerting a negative influence on ESG performance. These findings extend upper echelons theory by demonstrating that executives' ideological orientations and educational trajectories play a critical role in shaping strategic decisions on ESG.

This research paper is authored by Tim Heubeck and Annina Ahrens. Tim Heubeck was responsible for the conceptualization, development of the theoretical framework, methodology, data collection and curation, formal analysis, visualization, project administration, review, and editing. Annina Ahrens contributed to the study's conceptual framing and was involved in both drafting the original manuscript, writing, and engaging in its review, critical revision, and substantive editing.

The third research paper in Chapter 5 is titled "Top Management as An Enabler of Firms' Sustainable and Digital Transformation: A Literature Review and Research Agenda for Twin Transformation", which was published in the *International Journal of Innovation Management.*

This article contributes to the special issue of the *International Journal of Innovation Management* on firms' twin transformation. Given that this field of inquiry is still at an early stage (Rosário & Dias, 2022), the study employs a review-based approach to explore how top managers may influence and potentially facilitate twin transformation processes. In doing so, it also highlights gaps in the existing literature and outlines directions for future research through a set of guiding questions.

The concept of twin transformation describes the parallel pursuit of digitalization and sustainability within organizations, an ambition that has been explicitly emphasized as a policy priority by the European Union (EU) (Burinskienė & Nalivaikė, 2024). Although prior research on digital and sustainability transformations has consistently demonstrated the relevance of top management for such far-reaching organizational changes, evidence concerning their role in the twin transformation context remains limited (Oelze, 2017; Wrede et al., 2020). To address this shortcoming, the authors reviewed 48 publications and synthesized insights regarding how executives may enable twin transformation. The analysis indicates that factors such as personal attributes and skills, leadership style, and governance arrangements, including incentives and ownership structures, function as central enablers. At the same time, the review reveals that certain themes, well established in the separate literatures on sustainability and digital transformation, have not yet been transferred to the twin transformation domain. On this basis, the paper proposes a research agenda designed both to inform academic debate and to support practitioners in leveraging the synergies that arise when digital and sustainability strategies are pursued jointly.

This research paper is authored by Annina Ahrens and Tim Heubeck. Annina Ahrens was responsible for project administration, conceptual development, methodology, data collection and analysis, drafting, and revising the manuscript. Tim Heubeck was responsible for project supervision, conceptual development, reviewing, and editing the manuscript.

The fourth research paper in Chapter 6 is titled “Directing the Visionary: Governance Mechanisms and Corporate ESG Performance under Founder-CEO Leadership” and is currently under review in a scientific journal.

Founder CEOs possess distinct characteristics that differentiate them from professional CEOs hired to lead the firm (Abebe et al., 2020; Fahlenbrach, 2009; Nelson, 2003). These include long-term thinking, greater risk-taking propensity, and a heightened sense of responsibility for the firm’s behavior (Arthurs & Busenitz, 2003; Fahlenbrach, 2009; J. Kim & Koo, 2018), which may increase their likelihood of engaging in ESG initiatives (Papadakis & Barwise, 2002; Wernicke et al., 2022). Prior research has further shown that governance mechanisms such as gender diversity on boards and the presence of CSR committees facilitate the fulfillment of stakeholder demands for sustainability (Biswas et al., 2018; Velte & Stawinoga, 2020). Building on these insights, the research model of this study hypothesizes that CEO founder status positively influences firms’ ESG performance, while the presence of a CSR committee and a higher proportion of female directors strengthen and moderate this relationship. These

hypotheses are consistent with upper echelons theory, which emphasizes that managers' personal characteristics, values, and beliefs strongly shape their decision-making (Hambrick, 2007; Hambrick & Mason, 1984). The study, therefore, examines whether CEO founder status enhances or impedes firms' ESG performance, while also assessing the effectiveness of governance mechanisms in guiding and monitoring CEOs with respect to ESG initiatives.

Drawing on a sample of U.S. firms listed in the Nasdaq 100, the findings indicate that CEO founder status does not have a significant direct influence on ESG performance. However, the presence of a CSR committee positively moderates the relationship between founder CEOs and the environmental pillar of ESG, while greater female representation on boards strengthens the relationship between founder CEOs and the governance pillar of ESG. Overall, the study contributes to research on governance mechanisms by underscoring their important role, particularly in shaping the environmental and governance dimensions of ESG performance.

This research paper is co-authored by Annina Ahrens and Tim Heubeck. Annina Ahrens was responsible for project administration, theoretical framework, conceptual development, reviewing, and substantive editing. Tim Heubeck was responsible for project supervision, conceptual development, methodology, data collection and analysis, reviewing, and editing the manuscript.

The fifth research paper, presented in Chapter 7 and entitled "The Missing Link in SMEs' Digital Transformation: How Business Model Innovation Bridges Digital Technology Adoption and Competitive Advantage," is being finalized for submission to a scientific journal.

Digital transformation and the adoption of novel digital technologies yield several benefits, such as enhanced productivity and cost reduction (Y. Li et al., 2024). However, technology adoption poses particular risks for SMEs, as they often lack the financial resources and expertise required for successful implementation (Moeuf et al., 2020). A significant research gap remains regarding how digital technology adoption translates into competitive advantage for SMEs (Gartner et al., 2024). Given their critical importance to the EU economy, it is essential to provide guidance for SMEs in managing their digital transformation (Mittal et al., 2018; Müller et al., 2018). This study argues that the missing link between digital technology adoption and SME competitiveness lies in embedding these technologies into the existing business model, thereby altering how firms create, deliver, and capture value. Since top management plays a decisive role in SMEs' digital adoption (Lashitew, 2023; Moeuf et al., 2020), the study emphasizes the importance of managerial attitudes toward digital transformation and whether

they perceive digital technologies as beneficial for business model innovation (Heubeck & Meckl, 2022). These attitudes are conceptualized as cognitive business model innovation, hypothesized to mediate the relationship between digital technology adoption and competitive advantage. Drawing on managerial capabilities theory (Adner & Helfat, 2003; Helfat & Martin, 2015), the study argues that cognitive business model innovation strengthens the link between technology adoption and competitive advantage.

Evidence from German manufacturing SMEs indicates that cognitive business model innovation plays a mediating role in translating digital technology adoption into competitive advantage. However, only value architecture evaluation, and therefore reconfiguration of internal structures, and broader business model transformation significantly strengthen this pathway. Overall, the study underscores that only the deep integration of digital technologies into business models enables firms to fully capture the benefits of digital transformation and secure sustainable competitiveness in SMEs.

This research paper is authored by Annina Ahrens, Tim Heubeck, Patrick Held, and Reinhard Meckl. Annina Ahrens was responsible for project administration, conceptual development, writing, reviewing, and editing the manuscript. Tim Heubeck was responsible for project supervision, conceptual development, reviewing, and editing the manuscript. Patrick Held was responsible for methodology, data collection, and analysis, reviewing and editing the manuscript. Reinhard Meckl was responsible for project supervision, conceptual development, and data collection.

Chapter 2 Theoretical Background

2.1 Firm Transformations

2.1.1 Sustainability Transformation

Topics such as the responsible use of resources or the reduction of CO_2 emissions are no longer concerns of governments alone but are now also reflected in the goals of many companies. The United Nations' Sustainable Development Goals (SDGs) set the framework for sustainability, which companies have adopted and incorporated into their corporate objectives (Berrone et al., 2023). In addition to the voluntary commitment to achieving environmental goals, regulations such as sustainability reporting are increasingly being introduced, requiring companies to disclose their sustainability strategies to their stakeholders (Hummel & Jobst, 2024).

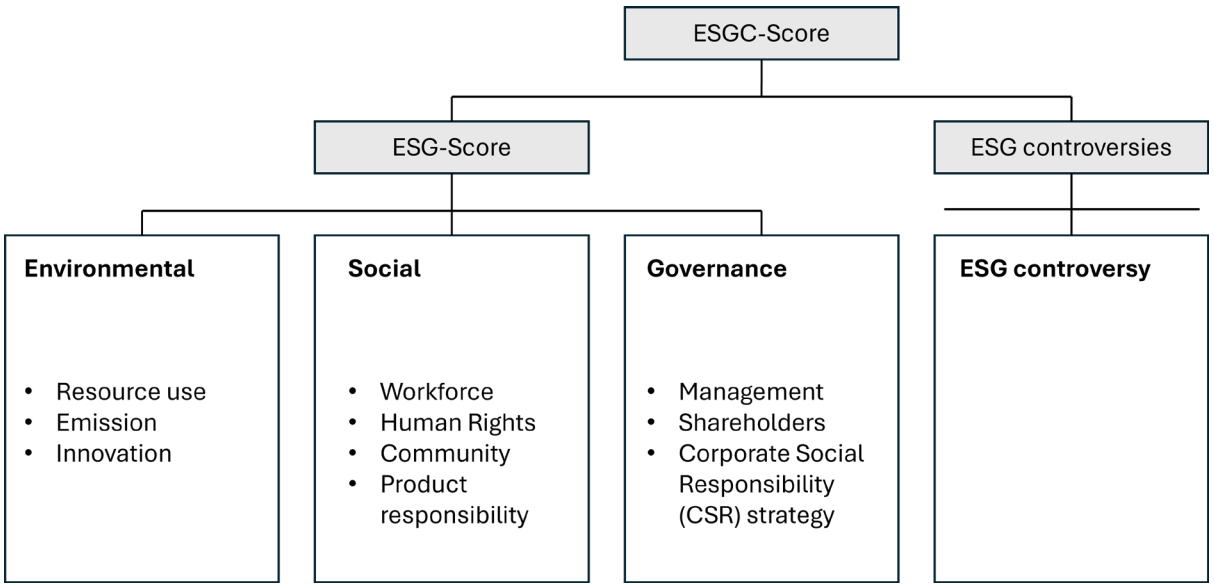
Pressure on companies is also increasing from the stakeholder side, as consumers in particular are placing greater emphasis on sustainability and demanding a fair use of resources (Haleem et al., 2022; Kaźmierczak, 2022). This forces companies to engage more intensively with the issue of sustainability and to allocate more corporate resources to comply with sustainability standards, reduce CO_2 emissions, monitor supply chains, and verify that their suppliers adhere to these standards.

A company's sustainability performance is assessed on the basis of ESG scores. ESG consists of the three pillars: Environmental, Social, and Governance (T. Li et al., 2021). The resulting score provides a benchmark by which companies can be assessed and compared. Several databases collect and publish these scores, such as LSEG Workspace, KLD Analytics, or MSCI ESG (Martiny et al., 2024). For the data provider LSEG Workspace, the environmental pillar consists of emissions, innovation, and resource use; the social pillar comprises community, human rights, product responsibility, and workforce; and the governance pillar includes CSR strategy, management, and shareholders (LSEG, 2024). In addition, ESG controversies are recorded, which incorporate controversial media reports. The ESG score, together with ESG controversies, constitutes the ESGC score, which is calculated by the LSEG platform (LSEG, 2024). Figure 2 presents a graphical representation of the ESGC framework. It should be noted, however, that the different providers include varying sets of data and therefore calculate the scores differently. This creates discrepancies between the individual scores, which has led to criticism of the measurement process (Martiny et al., 2024).

In this sense, the ESG score serves as a non-financial metric that enables investors and other stakeholders to assess a company's behavior and its potential for long-term value creation (T. Li et al., 2021). Accordingly, ESG falls within the domain of responsible investing and is considered a driver of sustainable corporate value (Edmans, 2023).

The term corporate social responsibility (CSR) is frequently used in sustainability research. Although CSR and ESG are often employed interchangeably, they differ in both origin and scope. CSR is primarily framed as a strategic objective within firms, whereas ESG is predominantly applied by investors as a non-financial but measurable indicator to inform investment decisions (Kaźmierczak, 2022).

Figure 2 ESGC Framework - Composition of ESG scores



Source: own representation based on LSEG (2024)

To enhance corporate sustainability, companies are adapting their governance mechanisms to ensure the alignment of decisions and actions with sustainability goals. Therefore, firms have begun to integrate positions such as Chief Sustainability Officer (CSO) into their top management (Fu et al., 2020). It is also becoming increasingly common for supervisory boards to establish CSR committees, which are intended to both support and monitor top management in achieving sustainability goals (Velte & Stawinoga, 2020). Nevertheless, the relevance of governance mechanisms at the top management level remains debated, as studies provide mixed evidence regarding the effectiveness of CSOs or CSR committees in enhancing firms' environmental and social performance (e.g., Berrone & Gomez-Mejia, 2009; Radu & Smaili, 2022; Velte & Stawinoga, 2020).

Research in the field of sustainability performance continues to grow steadily. Many academic journals focus precisely on questions such as how sustainability can be embedded in everyday corporate practice. Key topics in this regard include the circular economy (Chabowski et al., 2025), sustainable supply chains (Govindan et al., 2024), and green innovations (Block et al., 2025). The large number of articles published in high-class journals each year on these topics underscores their relevance and the necessity of addressing them within theory and academia (e.g., Clément et al., 2025). Companies face major challenges with regard to sustainability, as the implementation of sustainable production standards often requires costly investments, while knowledge or financial resources for their realization are frequently lacking (Jacobo-Hernandez

et al., 2021). For this very reason, it is crucial to engage in this subject to provide managers with practical guidance, enabling them to pursue long-term orientation and value preservation.

2.1.2 Digital Transformation

Research distinguishes between different terms in regard to digital transformation. First, the terms *digitization* and *digitalization* can be differentiated. *Digitization* refers to the conversion of analog data into digital formats, whereas *digitalization* denotes the integration of digital technologies (Frenzel et al., 2021). There is a diverse set of definitions of digital transformation, which at their core emphasize three common elements: (1) internal organizational elements are altered, (2) digital technologies are implemented, and (3) these changes lead to substantial transformation within the firm (Hanelt et al., 2021; Morakanyane et al., 2017). Therefore, d*igital transformation* refers to the integration of digital technologies to fundamentally reshape how organizations operate and to create new forms of value (Morakanyane et al., 2017; Vial, 2019).

Digital transformation has long been embedded in the operations and business functions of numerous firms (Zeng et al., 2022). Companies are increasingly deploying digital technologies across functional areas and for diverse tasks, thereby creating a wide range of opportunities. The implementation of digital technologies can profoundly affect a firm's business model, thereby transforming the ways in which firms create, deliver, and capture value (Ancillai et al., 2023). Digital technologies can be integrated to automate production processes and increase efficiency (Ajiga et al., 2024; Feng & Ali, 2024; X. Wang et al., 2022), as well as to enhance products in order to meet customer demands and deliver innovative solutions (Cay et al., 2019). For example, predictive maintenance equips machines with sensors that forecast wear and necessary inspections, enabling users to avoid downtime while allowing manufacturing firms to provide complementary services (Ajiga et al., 2024). A coherent firm-wide strategy is essential for digital transformation, ensuring the integration of new digital products and services with platforms through digital resources (Bharadwaj et al., 2013).

Scholars have long been engaged with digital transformation, seeking to support companies and managers in making the right decisions regarding corporate digitalization (Hanelt et al., 2021). Successive waves of digitalization (e.g., Industry 4.0, artificial intelligence) demand renewed examination of existing findings, as new digital technologies continue to emerge (X. Xu et al., 2021). An important field of research is Industry 4.0, which focuses on automating production processes through the implementation of novel digital technologies in order to enhance productivity while reducing costs (Chen et al., 2020). Industry 4.0 refers to the fourth industrial revolution, first introduced in Germany in 2011 as an initiative to enhance the competitiveness

of the manufacturing industry (Drath & Horch, 2014; Müller et al., 2018). In this context, several key technologies are needed to facilitate the integration of Industry 4.0 (Ortega-Gras et al., 2021). Sebastian et al. (2017) refer to these as SMACIT technologies (social, mobile, analytics, cloud, and internet of things) but acknowledge that emerging technologies such as artificial intelligence (AI) extend beyond this classification. Although AI is only now becoming widely integrated into business processes, it already offers considerable potential for firms (Kitsios & Kamariotou, 2021). Nevertheless, many organizations continue to struggle with their adoption, particularly in terms of effective implementation and the ability to generate sustainable business value (Holmström, 2022). Researchers in the field of Industry 4.0 have made it their mission to provide managers with guidance on how to successfully implement these technologies within their organizations in order to realize the promised benefits (e.g., Frank et al., 2019; Ghobakhloo & Iranmanesh, 2021).

Businesses have responded to the dynamic digital environment and the pressure to advance digitalization by restructuring their top management to include digital leadership positions (Firk et al., 2021). Within the C-suite, roles such as Chief Digital Officer (CDO) and Chief Technology Officer (CTO) have become established to develop strategies for the optimal implementation of novel digital technologies (Christofi, 2024; Medcof & Lee, 2017). The appointment of CDOs reflects the centralization of digital transformation responsibilities within the top management team, with CDOs serving two central functions: accelerating and coordinating digital transformation (Firk et al., 2021). Christofi (2024) provides evidence for the importance of CDOs in the successful implementation of digital transformation in his study, thereby underscoring CDOs strategic relevance within the organizational context.

Recent studies focus on identifying the drivers of digital transformation, with evidence showing that digital orientation and digital capabilities positively influence digital innovation and transformation processes, which in turn enhance both financial and non-financial performance (Baiyere et al., 2025; Khin & Ho, 2019; Rupeika-Apoga et al., 2022). A recurring finding is that there is often a gap between the capabilities required for successful implementation and those available within a business (Baiyere et al., 2025). This gap is particularly pronounced in small and medium-sized enterprises (SMEs), which often lack the necessary capabilities and resources (Faruque et al., 2024). At the same time, digital transformation presents several other challenges, such as the cost-intensive acquisition of new digital technologies (Thirumal et al., 2024). As a result, SMEs struggle with the integration of novel digital technologies and frequently fail to keep pace with digital adoption (Müller et al., 2024). For smaller firms, this poses a considerable risk, as they cannot always afford the required investments and may

neglect implementation unless forced by competitive pressure (Faruque et al., 2024). The COVID-19 pandemic further underscored this point, making it evident that the integration of digital technologies can provide firms—especially SMEs—with enhanced competitive advantages and a significant impact on firm performance (Guo et al., 2020).

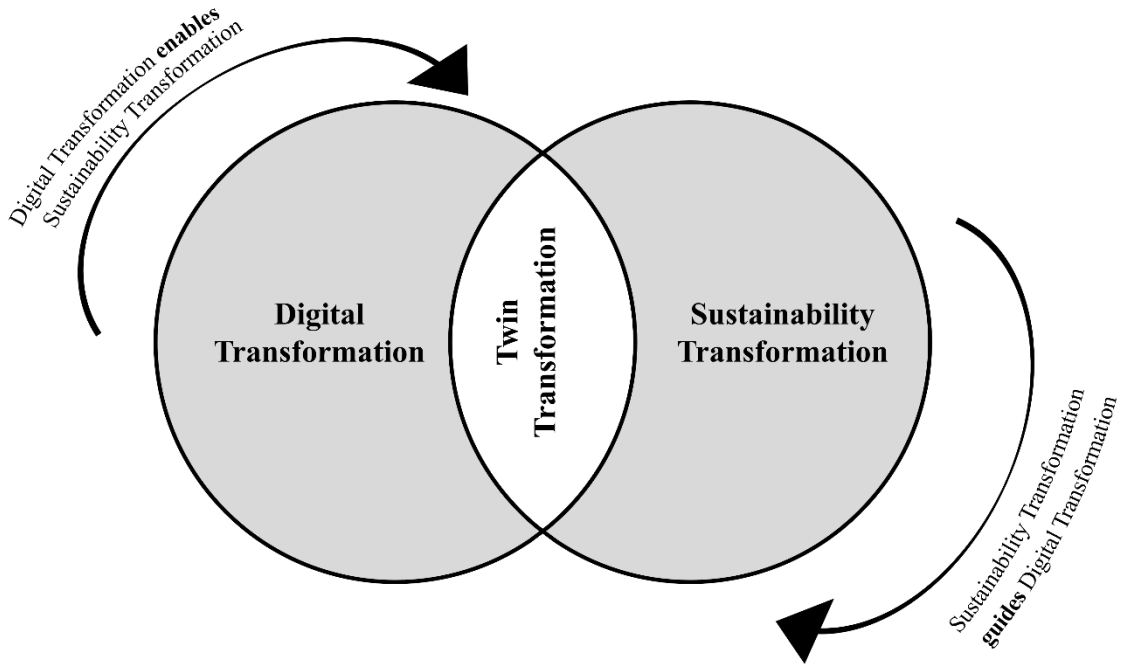
2.1.3 Twin Transformation

Twin transformation is understood as the interplay between digital transformation and sustainability transformation (Breiter et al., 2024). The term twin transformation has been shaped by management consulting firms, which have popularized it among companies (Wilkens et al., 2023). However, there is no single unified definition of this term, as it is still relatively new and has only gained popularity in research in recent years. In fact, several terms exist that describe the same or similar phenomenon for instance, twin transition or industry 5.0—both referring to the simultaneous pursuit of digital and sustainability objectives (Barth et al., 2023; Carayannis & Morawska-Jancelewicz, 2022).

Twin transformation also builds on the SDGs and represents a key objective formulated by the EU: the simultaneous pursuit of digital and sustainability transformation (Burinskienė & Nalivaikė, 2024). It is intended to enable companies to achieve both goals at the same time while leveraging the synergies that arise from their interaction, thereby fostering enhanced competitiveness (Christmann et al., 2024; Tabares et al., 2025). Digital technologies can be used by firms to fulfill sustainability goals: a digital technology can help reduce the CO_2 emissions of a manufacturing company (Yang Shen et al., 2023), or blockchain technologies can assist in verifying sustainability standards along the supply chain (Esmaeilian et al., 2020). Conversely, sustainability itself can also serve as an objective in the adoption of digital technologies, for instance, by aiming to reduce e-waste (Kazancoglu et al., 2022). Figure 3 shows how the two transformations overlap each other.

Since the incorporation of digital technologies can also have adverse effects on the environment, for instance, when recycling is not carried out properly or when such technologies require additional resources such as water and electricity (Chen et al., 2020), the two transformations must be considered together rather than proceeding in parallel (Christmann et al., 2024).

Figure 3 Twin Transformation: The Synergies of Digital and Sustainable Transformation



Source: own representation based on Christman et al., (2024, p. 495)

While twin transformation has not yet been sufficiently studied, both digital and sustainability transformation have already been analyzed in great depth. It is therefore important to examine how sustainability and digital transformation differ, where they can be combined, and where they may exclude each other. While the goal of digital transformation is to foster innovation and improve process efficiency, the focus of sustainability transformation lies on ecological, social, and governance performance (Schallmo et al., 2025). However, both pursue the goal of long-term value creation for a company.

In addition, this thesis argues that twin transformation aims to create long-term value for companies and to secure their survival in a sustainable manner. This aligns with the definition by Christmann et al. (2024), who view twin transformation as a "value-adding interplay" between sustainability and digital transformation, mutually reinforcing one another (p. 495).

The responsibility for implementing twin transformation lies with top management, while its realization is carried forward by employees across all levels of the organization (Christmann et al., 2024). Since the literature on digital transformation highlights the importance of corporate culture in fostering change (Butt et al., 2024), twin transformation may likewise require an

organizational culture that promotes openness to change. Since the phenomenon of twin transformation is still not sufficiently studied, there is a need for action to support managers who struggle to realize synergies from it (Schallmo et al., 2025). Since companies will increasingly face the challenge of advancing sustainability and digital transformation simultaneously, this should be examined more intensively in order to align theory on a common foundation and to provide practical implications for corporate managers.

2.2 Top Management and Governance in Firms

2.2.1 Overview of Theories in Top Management Literature

There is a wide range of theories in strategic management that emphasize the decisive influence of top management and governance mechanisms on corporate decision-making. These theories seek to explain why managers differ in their responses to external environments and internal challenges and therefore exhibit distinct business outcomes. They provide different perspectives on why top managers act in certain ways that ultimately shape firm performance. Several theories conclude that the individual characteristics and personal attributes of managers play a central role in shaping decisions. Theories such as upper echelons theory build on the assumption that managerial characteristics and capabilities significantly affect decision-making (Hambrick, 2007; Hambrick & Mason, 1984).

Another stream of theories highlights that managers are behave opportunistically, giving rise to the debate over whether managers primarily strive to advance their personal goals—thus requiring monitoring and control (Agency Theory) (Jensen & Meckling, 1976)—or whether they consistently place the well-being of the organization at the forefront and therefore need mechanisms that support them in this endeavor (Stewardship Theory) (Davis et al., 1997). Agency theory and stewardship theory are applied in different business environments and research contexts, as they appear to represent opposing perspectives. These theories are part of studies examining the necessity of control and monitoring functions to ensure that managers make decisions that do not harm firm performance or other corporate outcomes. While some studies provide stronger support for one theory over the other, both theories remain legitimate and continue to play a role in contemporary research.

There are numerous theories that focus on behavior as an explanation for decision-making, one of which is the behavioral consistency theory (Wernimont & Campbell, 1968). It posits that managerial decision-making is also influenced by prior experiences (Cronqvist et al., 2012). It can be argued that managers tend to repeat their behavior, making future decisions consistent

with those taken in the past. Behavioral consistency, therefore, exists when behavior in one situation can be used to predict behavior in another (Cronqvist et al., 2012).

Conversely, managerial decision-making is strongly shaped by existing values, norms, and experiences that managers have previously acquired. These patterns likewise influence decision-making. Dynamic managerial capabilities theory addresses precisely this process, explaining how managerial characteristics can significantly affect decision-making and, in turn, the competitive advantage of firms in dynamic environments (Adner & Helfat, 2003; Helfat & Martin, 2015). The characteristics of managers are inherently individual and encompass managerial human capital (skills and competencies), social capital (shared beliefs and values), and managerial cognition (mental models and interpretive frameworks) (Heubeck & Meckl, 2022).

Table 2 Overview of Theories

Theory	Main Proposition	Key Concepts	Relevance to the thesis	Key References	Paper #
Upper Echelons Theory (UET)	The decision-making of managers is influenced by their personal characteristics, beliefs, and values.	Managerial background characteristics (e.g., age, education, experience); psychological factors (e.g., values, cognition)	UET was used to explain how individual traits of top managers (e.g., political ideology, founder status, elite education) shape sustainability and digital transformation.	Hambrick & Mason (1984); Hambrick (2007)	# 2, # 4
Agency Theory	Agency Theory posits a relationship between a principal and an agent, characterized by information asymmetry, in which the agent must be monitored and incentivized to ensure alignment with the principal's objectives.	Agency costs (i.e., the costs associated with monitoring the agent)	Agency Theory has been employed to explain the necessity of governance mechanisms that ensure the CEO and top management act in the best interests of shareholders.	Jensen and Meckling (1976); Jensen (1986)	# 1, # 4
Stakeholder Theory	Stakeholder Theory posits that firm management must consider relationships with all stakeholders, not only shareholders, by balancing their respective interests in a fair manner.	Stakeholder groups (e.g., employees, customers, suppliers, governments, and others)	Stakeholder Theory has been employed to explain that firms face increasing stakeholder pressure and therefore require governance mechanisms to ensure that top management fulfills stakeholder interests.	Freeman (1984)	# 1

Stewardship Theory	Stewardship Theory posits that the CEO and top management function as "stewards of the firm," aligning their actions with the objectives of the company and its stakeholders.	Counterargument to agency theory; Stewards are trustworthy and pro-organizational (Davis et al., 1997).	Stewardship Theory has been employed to explain that founder-CEOs act as stewards, requiring encouragement through governance mechanisms rather than strict monitoring and control.	Davis et al., (1997)	# 4
Behavioral Consistency Theory	Behavioral consistency theory posits that individuals tend to maintain consistent behavior across different contexts.	Past behavior predicts future decision-making.	Behavioral Consistency Theory explains that the way CEOs make decisions in their private lives may also influence the decisions they make in the workplace.	Wernimont & Campbell (1968)	# 2
Dynamic Managerial Capabilities Theory (DMC)	DMC suggests that managers possess distinct characteristics that can create competitive advantage and shape organizational decision-making.	Main capabilities: Managerial Human Capital, Managerial Social Capital, and Managerial Cognition.	DMC explains how managerial cognition especially shapes decisions related to the business model and, in turn, influences competitive advantage.	Adner & Helfat, (2003); Helfat & Martin (2015)	# 5

Table 2 lists all the theories discussed in this thesis. It presents their main propositions, key concepts, as well as their relevance for this work. The paper number indicates in which articles each theory has been applied.

Subsequently, the most important theories and debates will be briefly outlined in order to provide the theoretical framework of this thesis. Theories only briefly introduced in the research papers will be discussed in greater detail to ensure a consistent conceptual understanding.

2.2.2 Selected Theories of Top Management and Governance in Research

Upper Echelons Theory

In strategic leadership research, the CEO is regarded as the individual within the firm who bears the greatest responsibility for overall corporate performance (Finkelstein et al., 2009). Upper Echelons Theory supports this notion by emphasizing the significant influence of CEOs' characteristics on firm performance, such as their personal traits, values, and perceptions shape decision-making (Cannella & Holcomb, 2005). This theory was first introduced by Hambrick and Mason (1984), who established the Upper Echelons framework. The model describes how a strategic situation prompts managers to engage in a decision-making process shaped by intrinsic factors such as values, beliefs, and other personal characteristics (Cannella & Holcomb, 2005). The authors further emphasize that decision-making in the upper echelons is a collective activity, primarily carried out by the entire top management team (Hambrick, 2007; Hambrick & Mason, 1984). The top management team typically comprises a small group of individuals engaged in strategic decision-making and reporting directly to the CEO (Finkelstein et al., 2009). Therefore, this theory explains that, due to individual characteristics influencing decision-making, different executives make different choices and thereby shape how the firm responds to external changes or stimuli (Cannella & Holcomb, 2005).

The authors of this theory also acknowledge the existence of additional factors shaping executives' decision-making. Hambrick (2007) identifies managerial discretion and job demands as two factors that affect the extent of executives' influence over decision-making and, consequently, firm performance. Moreover, the relationships among top management team members shape their decision-making and represent an additional contingency of the upper echelons framework (Hambrick, 2007).

The upper echelons theory by Hambrick and Mason remains one of the most influential theories in strategic management research and has given rise to a novel stream of research (Cannella & Holcomb, 2005; Neely et al., 2020). Numerous researchers have since examined a wide range of managerial characteristics and their impact on firm performance. It should be noted that

according to the established framework, the main factors influencing decision-making are the psychological characteristics of executives (Hambrick & Mason, 1984). However, these are difficult to measure, as researchers often lack direct access to top executives, and such personal data is inherently hard to obtain. Consequently, scholars have relied on more accessible information and observable personal characteristics, which allow inferences to be drawn about executives' psychological characteristics (Hambrick, 2007). The most commonly examined observable characteristics include CEO experience, age, tenure, gender, and education (Ali et al., 2022; Finkelstein & Hambrick, 1990; Setiawan & Gestanti, 2022; G. Wang et al., 2016). In addition, more personal attributes such as CEO narcissism (Cragun et al., 2020), religious orientation (Heubeck, 2024), political connection (Sun & Zou, 2021), or traumatic experiences (O'Sullivan et al., 2021), as well as work-related factors such as entrepreneurial orientation (Saiyed et al., 2023), or founder status (Osses et al., 2025) have also been studied. While some characteristics yield mixed results, the overall evidence suggests that top management characteristics exert a significant impact on firm performance, financial outcomes, and even social performance across a variety of industries, nations, and cultural contexts (e.g., Ali et al., 2022; Bhaskar et al., 2023; Manner, 2010; Yun Shen et al., 2022). Many of these studies have already accounted for the limitations of upper echelons theory by incorporating moderating factors such as incentives, environmental conditions, managerial discretion, and CEO power (e.g., Cao et al., 2021; Haleblian & Finkelstein, 1993; Heubeck & Meckl, 2023). These results provide valuable managerial implications, offering guidance for CEO succession and investment decisions (Setiawan & Gestanti, 2022; Yun Shen et al., 2022).

Agency Theory and Stewardship Theory

A company has various shareholders and stakeholders, whose interests often compete with one another, and it is the responsibility of top management to decide which of these interests to prioritize. A conflict of interest that frequently arises in companies not led by their owners concerns the relationship between the owner (principal) and the CEO (agent), who is entrusted with managing the firm on behalf of the owner (Eisenhardt, 1989). Due to information asymmetry—since the owner is not always fully informed about ongoing business activities—the manager may act in their own personal interest rather than pursuing the objectives of the shareholders (Jurkus et al., 2011). This conflict is referred to as the agency problem and entails the costs of monitoring the agent, known as agency costs (Jensen & Meckling, 1976).

Within this theory, it is assumed that managers may pursue personal objectives, such as safeguarding their reputation or securing long-term employment, which could, in turn, influence investment decisions (Agha, 2016; Eisenhardt, 1989; Jensen & Meckling, 1976). It is

further conceivable that managers might also seek to minimize their individual effort (Hart, 1983). Therefore, the principal can implement various mechanisms, such as introducing goal-oriented incentives or appointing an appropriately structured board of directors, to ensure that the agent does not harm the principal or pursue personal objectives (Fama & Jensen, 1983; Jensen & Meckling, 1976). Moreover, the agent typically has a risk profile different from the principal's and may engage in moral hazards. A common solution to this problem is to compensate the manager with stock or to increase involvement by granting him or her ownership in the company (Hart, 1983; Panda & Leepsa, 2017).

There are numerous studies that investigate how governance mechanisms and incentives can be optimally designed, and how the board of directors should be structured, in order to minimize agency costs (e.g., Andrei et al., 2024; Barker et al., 2024; Bonazzi & Islam, 2007). These studies provide implications for how to compose the board of directors and what incentives to implement to ensure that agents act in line with shareholders' interests (Agha, 2016; Martin et al., 2019).

In contrast, Stewardship theory suggests that the CEO behaves as a steward of the firm—contrary to the core assumptions of Agency Theory—by acting in line with the interests of all stakeholder groups (Davis et al., 1997). Stewardship Theory examines the same relationship between managers and owners, but with different underlying assumptions (Sundaramurthy & Lewis, 2003). It posits that the objectives of shareholders and managers are identical, as managers feel rewarded when maximizing organizational profits and thereby creating value for shareholders (Abdullah & Valentine, 2009; Banda, 2023). Therefore, managers seek to balance even the conflicting interests of stakeholders and shareholders, ensuring that decisions are serving the collective good (Davis et al., 1997). Managers are intrinsically motivated and oriented toward collective interests, rather than behaving opportunistically (Sundaramurthy & Lewis, 2003).

Stewardship Theory, therefore, offers different implications for appropriate governance mechanisms than Agency Theory (Rouault & Albertini, 2022), where the primary aim is to monitor and control the CEO. In Stewardship Theory, managers are viewed as intrinsically motivated to fulfill shareholders' goals and thus primarily need to be empowered and supported (Glinkowska & Kaczmarek, 2015; Sundaramurthy & Lewis, 2003). Moreover, it is recommended that the proportion of inside directors on the board be increased and CEO duality adopted (Sundaramurthy & Lewis, 2003).

Scholars of Stewardship Theory argue that the greater the power of the CEO, the better they are positioned to enhance firm performance and create value for shareholders (Banda, 2023).

Consequently, numerous studies have examined CEO duality and whether the combination of CEO and board chair roles constitutes an appropriate governance structure that leads to higher shareholder returns (Donaldson & Davis, 1991). This theory appears particularly applicable to firms that place social and environmental initiatives at the core of their corporate vision, as well as to organizations in the public sector (Seun et al., 2024).

Stakeholder Theory and Shareholder Theory

Stakeholder theory originated in the 1960s and was further developed in Freeman's (1984) seminal book, which advanced the notion that businesses should strive not only to create value for shareholders but also for their numerous stakeholders (Mahajan et al., 2023). Therefore, this theory is considered an ethical theory that contains a moral component and focuses on the fairness of business decisions (Bridoux & Stoelhorst, 2022; Phillips et al., 2003).

Stakeholder theory emphasizes that businesses should take stakeholders into account and seek to create value in collaboration with them (Parmar et al., 2010). This includes managing the diverse interests of stakeholders rather than placing shareholders' interests at the forefront of every business decision (Mahajan et al., 2023). Hence, businesses must be aware of and attentive to stakeholder interests in order to adequately incorporate them into their decision-making (Phillips et al., 2003).

Stakeholders of a business may include individuals, groups, or entities that influence or are impacted by the organization (Dmytriyev et al., 2021). Examples are customers, employees, investors (such as shareholders, creditors, and financial institutions), suppliers, and local communities (Dmytriyev et al., 2021; Parmar et al., 2010).

It is often argued that shareholder theory represents the opposing view to stakeholder theory, as it implies that businesses should prioritize only the interests of shareholders by creating value exclusively for them (O'Connell & Ward, 2020; Strand & Freeman, 2015). However, this is not entirely the case, since stakeholder theory also recognizes shareholders as stakeholders of the firm and therefore includes their interests, while emphasizing that shareholders' interests must be balanced with those of other stakeholders (Strand & Freeman, 2015). Consequently, the central task of firms is to manage relationships with all stakeholder groups and to create joint value (Bridoux & Stoelhorst, 2022).

Researchers have applied stakeholder theory across diverse research areas, including corporate sustainability, firm performance, business strategy, and stakeholder engagement (Mahajan et al., 2023). The stakeholder concept is particularly prevalent in sustainability and CSR literature, as stakeholders (e.g., customers and governments) raise concerns and demand that businesses

adopt more socially and environmentally responsible practices (Awa et al., 2024; Journeault et al., 2021). Stakeholder theory also shares certain similarities with CSR, as the premise of CSR is likewise not to prioritize shareholder value creation alone but to take societal initiatives into account (Dmytriyev et al., 2021). Nevertheless, the two concepts remain distinct.

The field of sustainability research focuses on the changing stakeholder interests and demands generated by the sustainability initiatives of businesses. The circular economy, for example, requires new approaches to creating value with stakeholders, and studies seek to guide firms in managing these relationships by applying stakeholder theory (Tapaninaho & Heikkinen, 2022). Researchers have concluded that managing existing relationships and fostering new ones significantly contribute to value creation in the context of sustainability and environmental efforts (Fobbe & Hilletofth, 2021).

Another emerging challenge in managing stakeholder relationships will be the adoption of new technologies and the question of virtually connecting stakeholders through digital tools (Pedrini & Ferri, 2019). The continued application of this established theory to contemporary research questions underscores its enduring relevance and highlights its value in addressing novel issues and responding to emerging challenges.

2.3 References

Abdullah, H., & Valentine, B. (2009). Fundamental and ethics theories of corporate governance. *Middle Eastern Finance and Economics*, *4*(4), 88–96.

Abebe, M. A., Li, P., Acharya, K., & Daspit, J. J. (2020). The founder chief executive officer: A review of current insights and directions for future research. *Corporate Governance: An International Review*, *28*(6), 406–436. https://doi.org/10.1111/corg.12348

Adner, R., & Helfat, C. E. (2003). Corporate effects and dynamic managerial capabilities. *Strategic Management Journal*, *24*(10), 1011–1025. https://doi.org/10.1002/smj.331

Agha, M. (2016). Agency costs, executive incentives, and corporate financial decisions. *Australian Journal of Management*, *41*(3), 425–458. https://doi.org/10.1177/0312896214550531

Agyemang, A. O., Yusheng, K., & Osei, A. (2025). Addressing sustainability footprint disclosure for high pollutant firms in China and the US: The roles of firms' governance structure, financing decisions, and eco-technology. *Corporate Social Responsibility and Environmental Management*, *32*(2), 2835–2858. https://doi.org/10.1002/csr.3092

Ajiga, D., Okeleke, P. A., Folorunsho, S. O., & Ezeigweneme, C. (2024). The role of software automation in improving industrial operations and efficiency. *International Journal of Engineering Research Updates*, *7*(1), 22–35. https://doi.org/10.53430/ijeru.2024.7.1.0031

Ali, R., Rehman, R. U., Suleman, S., & Ntim, C. G. (2022). CEO attributes, investment decisions, and firm performance: New insights from upper echelons theory. *Managerial and Decision Economics*, *43*(2), 398–417. https://doi.org/10.1002/mde.3389

Ancillai, C., Sabatini, A., Gatti, M., & Perna, A. (2023). Digital technology and business model innovation: A systematic literature review and future research agenda.

Technological Forecasting and Social Change, *188*, 122307. https://doi.org/10.1016/j.techfore.2022.122307

Andrei, A. G., Benischke, M. H., & Martin, G. P. (2024). Behavioral agency and the efficacy of analysts as external monitors: Examining the moderating role of CEO personality. *Strategic Management Journal*, *45*(1), 113–143.

Arthurs, J. D., & Busenitz, L. W. (2003). The Boundaries and Limitations of Agency Theory and Stewardship Theory in the Venture Capitalist/Entrepreneur Relationship. *Entrepreneurship Theory and Practice*, *28*(2), 145–162. https://doi.org/10.1046/j.1540-6520.2003.00036.x

Awa, H. O., Etim, W., & Ogbonda, E. (2024). Stakeholders, stakeholder theory, and corporate social responsibility (CSR). *International Journal of Corporate Social Responsibility*, *9*(1), 11. https://doi.org/10.1186/s40991-024-00094-y

Baiyere, A., Salmela, H., Nieminen, H., & Kankainen, T. (2025). Assessing digital capabilities for digital transformation—The MIND framework. *Information Systems Journal*, *35*(1), 6–38. https://doi.org/10.1111/isj.12519

Banda, M. (2023). Corporate governance: A theoretical review. *Corporate Governance*, *15*(16), 60–70. https://doi.org/10.7176/EJBM/15-16-08

Barker, J. M., Hofer, C., & Dobrzykowski, D. D. (2024). Supply chain representation on the board of directors and firm performance: A balance of relational rents and agency costs. *Journal of Operations Management*, *70*(3), 433–458. https://doi.org/10.1002/joom.1291

Barth, M., Gossen, M., Lang, D. J., & Santarius, T. (2023). Sustainable digitalization-fostering the twin transformation in a transdisciplinary way. *GAIA-Ecological Perspectives for Science and Society*, *32*(1), 6–9. https://doi.org/10.14512/gaia.32.S1.3

Berrone, P., & Gomez-Mejia, L. R. (2009). Environmental performance and executive compensation: An integrated agency-institutional perspective. *Academy of Management Journal*, *52*(1), 103–126. https://doi.org/10.5465/amj.2009.36461950

Berrone, P., Rousseau, H. E., Ricart, J. E., Brito, E., & Giuliodori, A. (2023). How can research contribute to the implementation of sustainable development goals? An interpretive review of SDG literature in management. *International Journal of Management Reviews*, *25*(2), 318–339. https://doi.org/10.1111/ijmr.12331

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. v. (2013). Digital business strategy: toward a next generation of insights. *MIS Quarterly*, *37*(2), 471–482.

Bhaskar, R., Li, P., Bansal, S., & Kumar, S. (2023). A new insight on CEO characteristics and corporate social responsibility (CSR): A meta-analytical review. *International Review of Financial Analysis*, *89*, 102815. https://doi.org/10.1016/j.irfa.2023.102815

Biswas, P. K., Mansi, M., & Pandey, R. (2018). Board composition, sustainability committee and corporate social and environmental performance in Australia. *Pacific Accounting Review*, *30*(4), 517–540. https://doi.org/10.1108/PAR-12-2017-0107

Block, J., Lambrecht, D., Willeke, T., Cucculelli, M., & Meloni, D. (2025). Green patents and green trademarks as indicators of green innovation. *Research Policy*, *54*(1), 105138. https://doi.org/10.1016/j.respol.2024.105138

Bonazzi, L., & Islam, S. M. N. (2007). Agency theory and corporate governance: A study of the effectiveness of board in their monitoring of the CEO. *Journal of Modelling in Management*, *2*(1), 7–23. https://doi.org/10.1108/17465660710733022

Breiter, K., Crome, C., Oberländer, A. M., & Schnaak, F. (2024). Dynamic capabilities for the twin transformation climb: A capability maturity model. *Information Systems Frontiers*, *26*(6), 2205–2226. https://doi.org/10.1007/s10796-024-10520-y

Bridoux, F., & Stoelhorst, J. W. (2022). Stakeholder theory, strategy, and organization: Past, present, and future. *Strategic Organization*, *20*(4), 797–809. https://doi.org/10.1177/14761270221127628

Burinskienė, A., & Nalivaikė, J. (2024). Digital and Sustainable (Twin) Transformations: A Case of SMEs in the European Union. *Sustainability*, *16*(4), 1533. https://doi.org/10.3390/su16041533

Burke, J. J., Hoitash, R., & Hoitash, U. (2019). The heterogeneity of board-level sustainability committees and corporate social performance. *Journal of Business Ethics*, *154*(4), 1161–1186. https://doi.org/10.1007/s10551-017-3453-2

Butt, A., Imran, F., Helo, P., & Kantola, J. (2024). Strategic design of culture for digital transformation. *Long Range Planning*, *57*(2), 102415. https://doi.org/10.1016/j.lrp.2024.102415

Cannella, A. A., & Holcomb, T. R. (2005). A multi-level analysis of the upper-echelons model. In *Multi-level issues in strategy and methods* (pp. 195–237). Emerald Group Publishing Limited.

Cao, X., Im, J., & Syed, I. (2021). A meta-analysis of the relationship between chief executive officer tenure and firm financial performance: The moderating effects of chief executive officer pay and board monitoring. *Group & Organization Management*, *46*(3), 530–563. https://doi.org/10.1177/1059601121989575

Carayannis, E. G., & Morawska-Jancelewicz, J. (2022). The futures of Europe: Society 5.0 and Industry 5.0 as driving forces of future universities. *Journal of the Knowledge Economy*, *13*(4), 3445–3471. https://doi.org/10.1007/s13132-021-00854-2

Cay, D., Goker, N., & Dursun, M. (2019). Modelling r&d strategy to fulfil customer demands through digital transformation. *WSEAS Transactions on Business and Economics*, *16*, 525–531.

Chabowski, B. R., Gabrielsson, P., Hult, G. T. M., & Morgeson III, F. V. (2025). Sustainable international business model innovations for a globalizing circular economy: a review and synthesis, integrative framework, and opportunities for future research. *Journal of International Business Studies*, *56*(3), 383–402. https://doi.org/10.1057/s41267-023-00652-9

Chams, N., & García-Blandón, J. (2019). Sustainable or not sustainable? The role of the board of directors. *Journal of Cleaner Production*, *226*, 1067–1081. https://doi.org/10.1016/j.jclepro.2019.04.118

Chen, X., Despeisse, M., & Johansson, B. (2020). Environmental sustainability of digitalization in manufacturing: A review. *Sustainability*, *12*(24), 10298. https://doi.org/10.3390/su122410298

Chou, R., Lee, K., & Ho, S. (2015). Love is (color) blind: Asian Americans and White institutional space at the elite university. *Sociology of Race and Ethnicity*, *1*(2), 302–316. https://doi.org/10.1177/2332649214553128

Christmann, A.-S., Crome, C., Graf-Drasch, V., Oberländer, A. M., & Schmidt, L. (2024). The twin transformation butterfly: Capabilities for an integrated digital and sustainability transformation. *Business & Information Systems Engineering*, *66*(4), 489–505. https://doi.org/10.1007/s12599-023-00847-2

Christofi, M. (2024). The role of chief digital officer: Critical insights into an emerging field and road map for future research. *Journal of Business Research*, *172*, 114390. https://doi.org/10.1016/j.jbusres.2023.114390

Clément, A., Robinot, É., & Trespeuch, L. (2025). The use of ESG scores in academic literature: A systematic literature review. *Journal of Enterprising Communities: People and Places in the Global Economy*, *19*(1), 92–110. https://doi.org/10.1108/JEC-10-2022-0147

Cragun, O. R., Olsen, K. J., & Wright, P. M. (2020). Making CEO narcissism research great: A review and meta-analysis of CEO narcissism. *Journal of Management*, *46*(6), 908–936. https://doi.org/10.1177/0149206319892678

Cronqvist, H., Makhija, A. K., & Yonker, S. E. (2012). Behavioral consistency in corporate finance: CEO personal and corporate leverage. *Journal of Financial Economics*, *103*(1), 20–40. https://doi.org/10.1016/j.jfineco.2011.08.005

Davis, J. H., Schoorman, F. D., & Donaldson, L. (1997). Toward a stewardship theory of management. *Academy of Management Review*, *22*(1), 20–47. https://doi.org/10.5465/amr.1997.9707180258

Dmytriyev, S. D., Freeman, R. E., & Hörisch, J. (2021). The relationship between stakeholder theory and corporate social responsibility: Differences, similarities, and implications for social issues in management. *Journal of Management Studies*, *58*(6), 1441–1470. https://doi.org/10.1111/joms.12684

Donaldson, L., & Davis, J. H. (1991). Stewardship theory or agency theory: CEO governance and shareholder returns. *Australian Journal of Management*, *16*(1), 49–64. https://doi.org/10.1177/031289629101600103

Drath, R., & Horch, A. (2014). Industrie 4.0: Hit or hype?[industry forum]. *IEEE Industrial Electronics Magazine*, *8*(2), 56–58. https://doi.org/10.1109/MIE.2014.2312079

Drori, I., Neumann, K., Vaara, E., Boersma, K., Kyratsis, Y., Santacreu-Vasut, E., & Suddaby, R. (2025). Grand challenges and the rhetoric of collective action. *Academy of Management Perspectives*, *39*(1), 7–21. https://doi.org/10.5465/amp.2024.0333

Edmans, A. (2023). The end of ESG. *Financial Management*, *52*(1), 3–17. https://doi.org/10.1111/fima.12413

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.5465/amr.1989.4279003

Esmaeilian, B., Sarkis, J., Lewis, K., & Behdad, S. (2020). Blockchain for the future of sustainable supply chain management in Industry 4.0. *Resources, Conservation and Recycling*, *163*, 105064. https://doi.org/10.1016/j.resconrec.2020.105064

Fahlenbrach, R. (2009). Founder-CEOs, Investment Decisions, and Stock Market Performance. *Journal of Financial and Quantitative Analysis*, *44*(2), 439–466. https://doi.org/10.1017/S0022109009090139

Fama, E. F., & Jensen, M. C. (1983). Separation of ownership and control. *The Journal of Law and Economics*, *26*(2), 301–325. https://doi.org/10.1086/467037

Faruque, M. O., Chowdhury, S., Rabbani, G., & Nure, A. (2024). Technology adoption and digital transformation in small businesses: Trends, challenges, and opportunities. *International Journal for Multidisciplinary Research*, *6*(10.36948).

Fatima, T., & Elbanna, S. (2023). Corporate social responsibility (CSR) implementation: A review and a research agenda towards an integrative framework. *Journal of Business Ethics*, *183*(1), 105–121. https://doi.org/10.1007/s10551-022-05047-8

Feng, C., & Ali, D. A. (2024). Leveraging digital transformation and ERP for enhanced operational efficiency in manufacturing enterprises. *Journal of Law and Sustainable Development*, *12*(3), e2455-e2455. https://doi.org/10.55908/sdgs.v12i3.2455

Finkelstein, S., & Hambrick, D. C. (1990). Top-management-team tenure and organizational outcomes: The moderating role of managerial discretion. *Administrative Science Quarterly*, *35*(3), 484–503. https://doi.org/10.2307/2393314

Finkelstein, S., Hambrick, D. C., & Cannella, A. A. (2009). *Strategic leadership: Theory and research on executives, top management teams, and boards*. Oxford University Press.

Firk, S., Hanelt, A., Oehmichen, J., & Wolff, M. (2021). Chief digital officers: An analysis of the presence of a centralized digital transformation role. *Journal of Management Studies*, *58*(7), 1800–1831. https://doi.org/10.1111/joms.12718

Fobbe, L., & Hilletofth, P. (2021). The role of stakeholder interaction in sustainable business models. A systematic literature review. *Journal of Cleaner Production*, *327*, 129510. https://doi.org/10.1016/j.jclepro.2021.129510

Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2019). Industry 4.0 technologies: Implementation patterns in manufacturing companies. *International Journal of Production Economics*, *210*, 15–26. https://doi.org/10.1016/j.ijpe.2019.01.004

Freeman, R. (1984). *Strategic Management: A Stakeholder Approach*. Pitman Publishing Inc.

Frenzel, A., Muench, J. C., Bruckner, M., & Veit, D. (2021). Digitization or digitalization?–Toward an understanding of definitions, use, and application in IS research. *AMCIS 2021 Proceedings*(18).

Fu, R., Tang, Y., & Chen, G. (2020). Chief sustainability officers and corporate social (Ir) responsibility. *Strategic Management Journal*, *41*(4), 656–680. https://doi.org/10.1002/smj.3113

García-Sánchez, I. M., Gómez-Miranda, M. E., David, F., & Rodríguez-Ariza, L. (2019). Board independence and GRI-IFC performance standards: The mediating effect of the CSR committee. *Journal of Cleaner Production*, *225*, 554–562. https://doi.org/10.1016/j.jclepro.2019.03.337

Gartner, J., Maresch, D., & Tierney, R. (2024). The key to scaling in the digital era: Simultaneous automation, individualization and interdisciplinarity. *Journal of Small Business Management*, *62*(2), 628–655. https://doi.org/10.1080/00472778.2022.2073361

George, G., Howard-Grenville, J., Joshi, A., & Tihanyi, L. (2016). Understanding and tackling societal grand challenges through management research. *Academy of Management Journal*, *59*(6), 1880–1895. https://doi.org/10.5465/amj.2016.4007

Ghobakhloo, M., & Iranmanesh, M. (2021). Digital transformation success under Industry 4.0: a strategic guideline for manufacturing SMEs. *Journal of Manufacturing*

Technology Management, *32*(8), 1533–1556. https://doi.org/10.1108/JMTM-11-2020-0455

Gill, A. (2008). Corporate governance as social responsibility: A research agenda. *Berkeley Journal of International Law*, *26*(2), 452–478.

Glinkowska, B., & Kaczmarek, B. (2015). Classical and modern concepts of corporate governance (Stewardship Theory and Agency Theory). *Management*, *19*(2), 84.

Govindan, K., Demartini, M., Formentini, M., Taticchi, P., & Tonelli, F. (2024). Unravelling and mapping the theoretical foundations of sustainable supply chains: A literature review and research agenda. *Transportation Research Part E: Logistics and Transportation Review*, *189*, 103685.

Guandalini, I. (2022). Sustainability through digital transformation: A systematic literature review for research guidance. *Journal of Business Research*, *148*, 456–471.

Guo, H., Yang, Z., Huang, R., & Guo, A. (2020). The digitalization and public crisis responses of small and medium enterprises: Implications from a COVID-19 survey. *Frontiers of Business Research in China*, *14*(1), 19. https://doi.org/10.1186/s11782-020-00087-1

Haleblian, J., & Finkelstein, S. (1993). Top management team size, CEO dominance, and firm performance: The moderating roles of environmental turbulence and discretion. *Academy of Management Journal*, *36*(4), 844–863. https://doi.org/10.5465/256761

Haleem, F., Farooq, S., Cheng, Y., & Waehrens, B. V. (2022). Sustainable management practices and stakeholder pressure: A systematic literature review. *Sustainability*, *14*(4), 1967. https://doi.org/10.3390/su14041967

Hambrick, D. C. (2007). Upper Echelons Theory: An Update. *Academy of Management Review*, *32*(2), 334–343. https://doi.org/10.5465/amr.2007.24345254

Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review*, *9*(2), 193–206. https://doi.org/10.5465/amr.1984.4277628

Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, *58*(5), 1159–1197. https://doi.org/10.1111/joms.12639

Hart, O. D. (1983). The market mechanism as an incentive scheme. *The Bell Journal of Economics*, *14*(2), 366–382. https://doi.org/10.2307/3003639

He, B., & Gan, L. (2025). Exploring the synergistic effect of CEO power and technological expertise in driving corporate digital transformation. *International Review of Financial Analysis*, *98*, 103918. https://doi.org/10.1016/j.irfa.2025.103918

Helfat, C. E., & Martin, J. A. (2015). Dynamic Managerial Capabilities. *Journal of Management*, *41*(5), 1281–1312. https://doi.org/10.1177/0149206314561301

Heubeck, T. (2024). Untangling the Paradoxical Relationship Between Religion and Business: A Systematic Literature Review of Chief Executive Officer (CEO) Religiosity Research: T. Heubeck. *Journal of Business Ethics*, *195*(1), 191–214. https://doi.org/10.1007/s10551-024-05688-x

Heubeck, T., & Meckl, R. (2022). Antecedents to cognitive business model evaluation: a dynamic managerial capabilities perspective. *Review of Managerial Science*, *16*(8), 2441–2466. https://doi.org/10.1007/s11846-021-00503-7

Heubeck, T., & Meckl, R. (2023). Microfoundations of innovation: A dynamic CEO capabilities perspective. *Managerial and Decision Economics*, *44*(6), 3108–3126. https://doi.org/10.1002/mde.3866

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review*, *28*(3), 383–396. https://doi.org/10.5465/amr.2003.10196729

Holmström, J. (2022). From AI to digital transformation: The AI readiness framework. *Business Horizons*, *65*(3), 329–339. https://doi.org/10.1016/j.bushor.2021.03.006

Hu, D., Peng, Y., Fang, T., & Chen, C. W. (2023). The effects of executives' overseas background on enterprise digital transformation: evidence from China. *Chinese Management Studies*, *17*(5), 1053–1084. https://doi.org/10.1108/CMS-11-2021-0503

Huang, S. K. (2013). The impact of CEO characteristics on corporate sustainable development. *Corporate Social Responsibility and Environmental Management*, *20*(4), 234–244. https://doi.org/10.1002/csr.1295

Hummel, K., & Jobst, D. (2024). An overview of corporate sustainability reporting legislation in the European Union. *Accounting in Europe*, *21*(3), 320–355. https://doi.org/10.1080/17449480.2024.2312145

Ishak, S. A., & Hashim, H. (2015). Low carbon measures for cement plant–a review. *Journal of Cleaner Production*, *103*, 260–274. https://doi.org/10.1016/j.jclepro.2014.11.003

Jacobo-Hernandez, C. A., Jaimez-Valdez, M. A., & Ochoa-Jimenez, S. (2021). Benefits, challenges and opportunities of corporate sustainability. *Management*, *25*(1), 51–74. https://doi.org/10.2478/manment-2019-0059

Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360.

Jost, J. T., & Amodio, D. M. (2012). Political ideology as motivated social cognition: Behavioral and neuroscientific evidence. *Motivation and Emotion*, *36*(1), 55–64. https://doi.org/10.1007/s11031-011-9260-7

Journeault, M., Perron, A., & Vallières, L. (2021). The collaborative roles of stakeholders in supporting the adoption of sustainability in SMEs. *Journal of Environmental Management*, *287*, 112349. https://doi.org/10.1016/j.jenvman.2021.112349

Jurkus, A. F., Park, J. C., & Woodard, L. S. (2011). Women in top management and agency costs. *Journal of Business Research*, *64*(2), 180–186. https://doi.org/10.1016/j.jbusres.2009.12.010

Kazancoglu, Y., Ozkan-Ozen, Y. D., Mangla, S. K., & Ram, M. (2022). Risk assessment for sustainability in e-waste recycling in circular economy. *Clean Technologies and Environmental Policy*, *24*(4), 1145–1157. https://doi.org/10.1007/s10098-020-019013

Kaźmierczak, M. (2022). A literature review on the difference between CSR and ESG. *Zeszyty Naukowe. Organizacja I Zarządzanie/Politechnika Śląska*(162), 275–289.

Khin, S., & Ho, T. C. F. (2019). Digital technology, digital capability and organizational performance: A mediating role of digital innovation. *International Journal of Innovation Science*, *11*(2), 177–195. https://doi.org/10.1108/IJIS-08-2018-0083

Kim, J., & Koo, K. (2018). Are founder CEO s effective innovators? *Asia-Pacific Journal of Financial Studies*, *47*(3), 426–448. https://doi.org/10.1111/ajfs.12217

Kim, Y. A. (2024). Blue goes green: The impact of the chief executive officer and board of directors' political ideology on corporate environmental performance. *Business Strategy and the Environment*, *33*(2), 134–148. https://doi.org/10.1002/bse.3481

Kitsios, F., & Kamariotou, M. (2021). Artificial intelligence and business strategy towards digital transformation: A research agenda. *Sustainability*, *13*(4), 2025. https://doi.org/10.3390/su13042025

Lashitew, A. A. (2023). When businesses go digital: The role of CEO attributes in technology adoption and utilization during the COVID-19 pandemic. *Technological Forecasting and Social Change*, *189*, 122324. https://doi.org/10.1016/j.techfore.2023.122324

Li, T.-T., Wang, K., Sueyoshi, T., & Wang, D. D. (2021). ESG: Research progress and future prospects. *Sustainability*, *13*(21), 11663. https://doi.org/10.3390/su132111663

Li, Y., Cui, L., Wu, L., Lowry, P. B., Kumar, A., & Tan, K. H. (2024). Digitalization and network capability as enablers of business model innovation and sustainability performance: The moderating effect of environmental dynamism. *Journal of Information Technology*, *39*(4), 687–715. https://doi.org/10.1177/02683962231219513

Lozano, R., Carpenter, A., & Huisingh, D. (2015). A review of 'theories of the firm' and their contributions to Corporate Sustainability. *Journal of Cleaner Production*, *106*, 430–442. https://doi.org/10.1016/j.jclepro.2014.05.007

LSEG. (2024). *Environmental, social and governance scores from LSEG*. https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf?esg=Commonwealth+Bank+of+Australia

Lu, H., Liu, X., & Osiyevskyy, O. (2023). Doing safe while doing good: Slack, risk management capabilities, and the reliability of value creation through CSR. *Strategic Organization*, *21*(4), 874–904. https://doi.org/10.1177/14761270221122428

Mahajan, R., Lim, W. M., Sareen, M., Kumar, S., & Panwar, R. (2023). Stakeholder theory. *Journal of Business Research*, *166*, 114104. https://doi.org/10.1016/j.jbusres.2023.114104

Mahran, K., & Elamer, A. A. (2024). Chief Executive Officer (CEO) and corporate environmental sustainability: A systematic literature review and avenues for future research. *Business Strategy and the Environment*, *33*(3), 1977–2003. https://doi.org/10.1002/bse.3577

Manner, M. H. (2010). The impact of CEO characteristics on corporate social performance. *Journal of Business Ethics*, *93*(1), 53–72. https://doi.org/10.1007/s10551-010-0626-7

Martin, G. P., Wiseman, R. M., & Gomez-Mejia, L. R. (2019). The interactive effect of monitoring and incentive alignment on agency costs. *Journal of Management*, *45*(2), 701–727. https://doi.org/10.1177/0149206316678453

Martiny, A., Taglialatela, J., Testa, F., & Iraldo, F. (2024). Determinants of environmental social and governance (ESG) performance: A systematic literature review. *Journal of Cleaner Production*, *456*, 142213. https://doi.org/10.1016/j.jclepro.2024.142213

Medcof, J. W., & Lee, T. (2017). The effects of the chief technology officer and firm and industry R&D intensity on organizational performance. *R&d Management*, *47*(5), 767–781. https://doi.org/10.1111/radm.12275

Miller, D., Xu, X., & Mehrotra, V. (2015). When is human capital a valuable resource? The performance effects of Ivy League selection among celebrated CEOs. *Strategic Management Journal*, *36*(6), 930–944. https://doi.org/10.1002/smj.2251

Mittal, S., Khan, M. A., Romero, D., & Wuest, T. (2018). A critical review of smart manufacturing & Industry 4.0 maturity models: Implications for small and medium-sized enterprises (SMEs). *Journal of Manufacturing Systems*, *49*, 194–214. https://doi.org/10.1016/j.jmsy.2018.10.005

Moeuf, A., Lamouri, S., Pellerin, R., Tamayo-Giraldo, S., Tobon-Valencia, E., & Eburdy, R. (2020). Identification of critical success factors, risks and opportunities of Industry 4.0 in SMEs. *International Journal of Production Research*, *58*(5), 1384–1400. https://doi.org/10.1080/00207543.2019.1636323

Morakanyane, R., Grace, A. A., & O'reilly, P. (2017). Conceptualizing digital transformation in business organizations: A systematic review of literature. *BLED 2017 Proceedings*, *21*.

Müller, J. M., Buliga, O., & Voigt, K.-I. (2018). Fortune favors the prepared: How SMEs approach business model innovations in Industry 4.0. *Technological Forecasting and Social Change*, *132*, 2–17. https://doi.org/10.1016/j.techfore.2017.12.019

Müller, J. M., Islam, N., Kazantsev, N., Romanello, R., Olivera, G., Das, D., & Hamzeh, R. (2024). Barriers and enablers for industry 4.0 in SMEs: a combined integration framework. *IEEE Transactions on Engineering Management.* Advance online publication. https://doi.org/10.1109/TEM.2024.3365771

Napp, T. A., Gambhir, A., Hills, T. P., Florin, N., & Fennell, P. S. (2014). A review of the technologies, economics and policy instruments for decarbonising energy-intensive manufacturing industries. *Renewable and Sustainable Energy Reviews*, *30*, 616–640. https://doi.org/10.1016/j.rser.2013.10.036

Neely, B. H., Lovelace, J. B., Cowen, A. P., & Hiller, N. J. (2020). Metacritiques of upper echelons theory: Verdicts and recommendations for future research. *Journal of Management*, *46*(6), 1029–1062. https://doi.org/10.1177/0149206320908640

Nelson, T. (2003). The persistence of founder influence: Management, ownership, and performance effects at initial public offering. *Strategic Management Journal*, *24*(8), 707–724. https://doi.org/10.1002/smj.328

Nohria, N., & Gulati, R. (1996). Is slack good or bad for innovation? *Academy of Management Journal*, *39*(5), 1245–1264. https://doi.org/10.5465/256998

O'Connell, M., & Ward, A. M. (2020). Shareholder theory/shareholder value. In *Encyclopedia of sustainable management* (pp. 1–7). Springer.

Oelze, N. (2017). Sustainable Supply Chain Management Implementation–Enablers and Barriers in the Textile Industry. *Sustainability*, *9*(8), 1435. https://doi.org/10.3390/su9081435

Ortega-Gras, J.-J., Bueno-Delgado, M.-V., Cañavate-Cruzado, G., & Garrido-Lova, J. (2021). Twin transition through the implementation of industry 4.0 technologies: Desk-research analysis and practical use cases in Europe. *Sustainability*, *13*(24), 13601. https://doi.org/10.3390/su132413601

Osses, L. D., Nitzsch, J. von, & Engelen, A. (2025). Do external founder CEOs place strategic emphasis on innovation? An upper echelons perspective. *Journal of Product Innovation Management*, *42*(3), 475–501. https://doi.org/10.1111/jpim.12771

O'Sullivan, D., Zolotoy, L., & Fan, Q. (2021). CEO early-life disaster experience and corporate social performance. *Strategic Management Journal*, *42*(11), 2137–2161. https://doi.org/10.1002/smj.3293

Panda, B., & Leepsa, N. M. (2017). Agency theory: Review of theory and evidence on problems and perspectives. *Indian Journal of Corporate Governance*, *10*(1), 74–95. https://doi.org/10.1177/0974686217701467

Papadakis, V. M., & Barwise, P. (2002). How Much do CEOs and Top Managers Matter in Strategic Decision-Making? *British Journal of Management*, *13*(1), 83–95. https://doi.org/10.1111/1467-8551.00224

Parmar, B. L., Freeman, R. E., Harrison, J. S., Wicks, A. C., Purnell, L., & Colle, S. de (2010). Stakeholder theory: The state of the art. *Academy of Management Annals*, *4*(1), 403–445. https://doi.org/10.5465/19416520.2010.495581

Pedrini, M., & Ferri, L. M. (2019). Stakeholder management: a systematic literature review. *Corporate Governance: The International Journal of Business in Society*, *19*(1), 44–59. https://doi.org/10.1108/CG-08-2017-0172

Phillips, R., Freeman, R. E., & Wicks, A. C. (2003). What stakeholder theory is not. *Business Ethics Quarterly*, *13*(4), 479–502. https://doi.org/10.5840/beq200313434

Pricopoaia, O., Cristache, N., Lupașc, A., & Iancu, D. (2025). The implications of digital transformation and environmental innovation for sustainability. *Journal of Innovation & Knowledge*, *10*(3), 100713. https://doi.org/10.1016/j.jik.2025.100713

Qadri, U. A., Ghani, M. B. A., Abbas, U., & Kashif, A. R. (2025). Digital technologies and social sustainability in the digital transformation age: a systematic analysis and

research agenda. *International Journal of Ethics and Systems*, *41*(1), 142–169. https://doi.org/10.1108/IJOES-08-2024-0239

Radu, C., & Smaili, N. (2022). Alignment versus monitoring: An examination of the effect of the CSR committee and CSR-linked executive compensation on CSR performance. *Journal of Business Ethics*, *180*(1), 145–163. https://doi.org/10.1007/s10551-021-04904-2

Rodrigue, M., Magnan, M., & Cho, C. H. (2013). Is environmental governance substantive or symbolic? An empirical investigation. *Journal of Business Ethics*, *114*(1), 107–129. https://doi.org/10.1007/s10551-012-1331-5

Rosário, A. T., & Dias, J. C. (2022). Sustainability and the digital transition: A literature review. *Sustainability*, *14*(7), 4072. https://doi.org/10.3390/su14074072

Rouault, J., & Albertini, E. (2022). Reconciling the social sector with external accountability requirements: Lessons from stewardship theory. *Journal of Business Research*, *142*, 485–498. https://doi.org/10.1016/j.jbusres.2021.12.082

Rupeika-Apoga, R., Petrovska, K., & Bule, L. (2022). The effect of digital orientation and digital capability on digital transformation of SMEs during the COVID-19 pandemic. *Journal of Theoretical and Applied Electronic Commerce Research*, *17*(2), 669–685. https://doi.org/10.3390/jtaer17020035

Saiyed, A. A., Tatoglu, E., Ali, S., & Dutta, D. K. (2023). Entrepreneurial orientation, CEO power and firm performance: an upper echelons theory perspective. *Management Decision*, *61*(6), 1773–1797. https://doi.org/10.1108/MD-05-2022-0641

Schallmo, D., Kolb, J., Schuster, T., Athanassopoulou, N., & Sepetis, A. (2025). Twin Transformation: Understanding The Nature And Combination Of Digital And Sustainability Transformation, *29*(05n06). https://doi.org/10.1142/S1363919625010017

Scherer, A. G., & Voegtlin, C. (2020). Corporate governance for responsible innovation: Approaches to corporate governance and their implications for sustainable development. *Academy of Management Perspectives*, *34*(2), 182–208. https://doi.org/10.5465/amp.2017.0175

Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G., & Fonstad, N. O. (2017). How big old companies navigate digital transformation. *MIS Quarterly Executive*, 197–213.

Setiawan, R., & Gestanti, L. (2022). CEO characteristics, firm policy, and firm performance. *International Journal of Business and Society*, *23*(1), 371–389. https://doi.org/10.33736/ijbs.4620.2022

Seun, K. J., Esther, I. O., & Wasiu, A. A. (2024). Unveiling Stewardship Theory: Emerging Trends and Future Direction. *Journal of Business and African Economy*, *11*(2), 95–112. https://doi.org/10.56201/jbae.v11.no2.2025.pg95.112

Shahab, Y., Ntim, C. G., Chen, Y., Ullah, F., Li, H.-X., & Ye, Z. (2020). Chief executive officer attributes, sustainable performance, environmental performance, and environmental reporting: New insights from upper echelons perspective. *Business Strategy and the Environment*, *29*(1), 1–16. https://doi.org/10.1002/bse.2345

Shang, Y., Raza, S. A., Huo, Z., Shahzad, U., & Zhao, X. (2023). Does enterprise digital transformation contribute to the carbon emission reduction? Micro-level evidence from China. *International Review of Economics & Finance*, *86*, 1–13. https://doi.org/10.1016/j.iref.2023.02.019

Shen, Y., Yang, Z., & Zhang, X. (2023). Impact of digital technology on carbon emissions: Evidence from Chinese cities. *Frontiers in Ecology and Evolution*, *11*, 1166376. https://doi.org/10.3389/fevo.2023.1166376

Shen, Y., Wallace, D., Reddy, K., & Ramiah, V. (2022). An investigation of CEO characteristics on firm performance. *Accounting & Finance*, *62*(3), 3563–3607. https://doi.org/10.1111/acfi.12896

Strand, R., & Freeman, R. E. (2015). Scandinavian cooperative advantage: The theory and practice of stakeholder engagement in Scandinavia. *Journal of Business Ethics*, *127*(1), 65–85. https://doi.org/10.1007/s10551-013-1792-1

Sun, R., & Zou, G. (2021). Political connection, CEO gender, and firm performance. *Journal of Corporate Finance*, *71*, 101918. https://doi.org/10.1016/j.jcorpfin.2021.101918

Sundaramurthy, C., & Lewis, M. (2003). Control and collaboration: Paradoxes of governance. *Academy of Management Review*, *28*(3), 397–415. https://doi.org/10.5465/amr.2003.10196737

Tabares, S., Parida, V., & Chirumalla, K. (2025). Twin transition in industrial organizations: Conceptualization, implementation framework, and research agenda. *Technological Forecasting and Social Change*, *213*, 123995. https://doi.org/10.1016/j.techfore.2025.123995

Tapaninaho, R., & Heikkinen, A. (2022). Value creation in circular economy business for sustainability: A stakeholder relationship perspective. *Business Strategy and the Environment*, *31*(6), 2728–2740. https://doi.org/10.1002/bse.3002

Thirumal, S., Udawatta, N., Karunasena, G., & Al-Ameri, R. (2024). Barriers to adopting digital technologies to implement circular economy practices in the construction industry: a systematic literature review. *Sustainability*, *16*(8), 3185. https://doi.org/10.3390/su16083185

Uddin, M. M. M. (2020). What are the dynamic links between agriculture and manufacturing growth and environmental degradation? Evidence from different panel income countries. *Environmental and Sustainability Indicators*, *7*, 100041. https://doi.org/10.1016/j.indic.2020.100041

Velte, P., & Stawinoga, M. (2020). Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. *Journal of Management Control*, *31*(4), 333–377. https://doi.org/10.1007/s00187-020-00308-x

Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *The Journal of Strategic Information Systems*, *28*(2), 118–144. https://doi.org/10.1016/j.jsis.2019.01.003

Voegtlin, C., Scherer, A. G., Stahl, G. K., & Hawn, O. (2022). Grand societal challenges and responsible innovation. *Journal of Management Studies*, *59*(1), 1–28. https://doi.org/10.1111/joms.12785

Wang, G., Holmes Jr, R. M., Oh, I.-S., & Zhu, W. (2016). Do CEOs matter to firm strategic actions and firm performance? A meta-analytic investigation based on upper echelons theory. *Personnel Psychology*, *69*(4), 775–862. https://doi.org/10.1111/peps.12140

Wang, S., & Zhang, H. (2025). Enhancing SMEs sustainable innovation and performance through digital transformation: Insights from strategic technology, organizational dynamics, and environmental adaptation. *Socio-Economic Planning Sciences*, *98*, 102124. https://doi.org/10.1016/j.seps.2024.102124

Wang, X., Kumar, V., Kumari, A., & Kuzmin, E. (2022). Impact of digital technology on supply chain efficiency in manufacturing industry. In *Digital transformation in industry: Digital twins and new business models* (pp. 347–371). Springer. https://doi.org/10.1007/978-3-030-94617-3_25

Wernicke, G., Sajko, M., & Boone, C. (2022). How Much Influence Do CEOs Have on Company Actions and Outcomes? The Example of Corporate Social Responsibility. *Academy of Management Discoveries*, *8*(1), 36–55. https://doi.org/10.5465/amd.2019.0074

Wernimont, P. F., & Campbell, J. P. (1968). Signs, samples, and criteria. *Journal of Applied Psychology*, *52*(5), 372. https://doi.org/10.1037/h0026244

Wilkens, H., Huber, F., & Hinsen, S. (2023, February 20). *5 Erkenntnisse für das Warum, Was und Wie der Twin Transformation*. https://www.ey.com/de_de/insights/consulting/warum-technologie-und-nachhaltigkeit-zusammen-gehoeren

Wrede, M., Velamuri, V. K., & Dauth, T. (2020). Top managers in the digital age: Exploring the role and practices of top managers in firms' digital transformation. *Managerial and Decision Economics*, *41*(8), 1549–1567. https://doi.org/10.1002/mde.3202

Xu, P., Xu, X., & Bai, G. (2022). Corporate environmental responsibility, CEO's tenure and innovation legitimacy: Evidence from Chinese listed companies. *Technology in Society*, *70*, 102056.

Xu, X., Lu, Y., Vogel-Heuser, B., & Wang, L. (2021). Industry 4.0 and Industry 5.0—Inception, conception and perception. *Journal of Manufacturing Systems*, *61*, 530–535. https://doi.org/10.1016/j.jmsy.2021.10.006

Yan, X., & Fang, Y. (2015). CO2 emissions and mitigation potential of the Chinese manufacturing industry. *Journal of Cleaner Production*, *103*, 759–773. https://doi.org/10.1016/j.jclepro.2015.01.051

Zeng, H., Ran, H., Zhou, Q., Jin, Y., & Cheng, X. (2022). The financial effect of firm digitalization: Evidence from China. *Technological Forecasting and Social Change*, *183*, 121951. https://doi.org/10.1016/j.techfore.2022.121951

Chapter 3 Research Paper 1: Slack resources for ESG performance

Heubeck, T., & Ahrens, A. (2024). Governing the responsible investment of slack resources in environmental, social, and governance (ESG) performance: How beneficial are CSR committees?. *Journal of Business Ethics*, 1-21. https://doi.org/10.1007/s10551-024-05798-6

Abstract

Possessing slack resources enables businesses to invest in innovative and stakeholder-focused initiatives. Therefore, we posit that higher slack resources encourage businesses to allocate these resources to improve their environmental, social, and governance (ESG) performance. Moreover, as a central sustainability governance mechanism, we hypothesize that the corporate social responsibility (CSR) committee supports investing slack resources in ESG initiatives. Using data from Nasdaq-100 firms, we find initial support for a positive effect of slack resources for ESG. However, further analyses reveal that slack resources become detrimental to ESG after an economically relevant threshold, indicating an inverted U-shaped effect of slack resources. Additionally, despite their generally positive effect, we uncover that CSR committees cannot effectively enhance the benefits of low or moderate slack levels for ESG nor prevent the detriments of elevated slack levels for ESG. Therefore, our study significantly contributes to the ongoing discourse surrounding slack resources, ESG, and the usefulness of CSR committees. These findings hold significant implications for ethical resource allocation, urging firms and their decision-makers to reconsider the dual-edged role of slack resources in the unique ESG context and support the CSR committee in realizing its potential for promoting sustainability and ethical practices within the organization.

Keywords: CSR committee, ESG performance, Slack resources

3.1 Introduction

Corporate social responsibility (CSR) is a significant concern for modern-day corporations, which need to balance tensions between profit-maximization goals (the shareholder view) and societal pressures for a sustainable, equitable, and transparent business environment (the stakeholder view) (Delgado-Ceballos et al., 2023; Fatima & Elbanna, 2023). Even more so, shareholders have begun to advocate for explicitly integrating CSR into business operations and strategies (Fatima & Elbanna, 2023). As a measure of CSR, environmental, social, and governance (ESG) performance has become a crucial nonfinancial metric (Martiny et al., 2024).[1] Despite receiving extensive attention, the connection between ESG and firm performance remains contentious, but most research supports the positive effect of ESG on financial performance (Huang, 2021). Thus, due to its financial materiality and the growing recognition of socially responsible investing (Martiny et al., 2024), it becomes imperative to understand the factors that drive ESG.

Previous research has explored various organizational factors as predictors of ESG (for an in-depth review, refer to Gillan et al., 2021), among which resource availability has emerged as an ESG conduit—or, conversely, a barrier when lacking (Hong et al., 2012). Slack resources are the "potentially utilizable resources that can be diverted or redeployed to pursue the goals of one or more organizational actors" (Mount et al., 2024, p. 13); thus, they represent an adequate measure of resource availability. However, the direct role of slack resources for ESG remains poorly understood. This comprehension is crucial because slack resources are pivotal in facilitating or constraining organizational outcomes (Mount et al., 2024), including ESG.

Drawing on the resource-based view (RBV) (Barney, 1991), prior research suggests that slack resources could represent a double-edged sword for ESG. For one, slack resources facilitate the beneficial impacts of ESG on organizational outcomes, notably firm value (e.g., Alshorman et al., 2024; Lu et al., 2023) and performance (e.g., Duque- Grisales & Aguilera-Caracuel, 2021; Lin et al., 2019). Other research suggests that financial slack may undermine CSR efforts (Shahzad et al., 2016) or be unrelated to CSR (Xu et al., 2014). Therefore, given the general significance of slack resources for ESG and the potential duality within slack deployment, it becomes evident that investigating the impact of resource slack on ESG performance is crucial to research and practice.

There are also significant gaps in the current knowledge of slack resources in the ESG context. Firstly, the limited research on slack as an enabler of ESG concentrates on financial slack resources (e.g., Lin et al., 2019; Shahzad et al., 2016; Wasiuzzaman et al., 2022), which may limit the understanding of the nuanced effects of slack on ESG because slack resources

comprise more than financial resources. Specifically, slack resources are multidimensional, comprising unabsorbed (e.g., liquid resources) and absorbed slack resources (e.g., excess staff). This distinction is significant due to the varying underlying characteristics of the two slack types (Marlin & Geiger, 2015; Mount et al., 2024), especially in the CSR domain (Zhao et al., 2024). However, previous research has either focused on unabsorbed slack (e.g., Islam et al., 2021; Wasiuzzaman et al., 2022) or absorbed slack (e.g., Mattingly & Olsen, 2018; Shang et al., 2023; Xu et al., 2014). Thus, there is a lack of research that examines both slack types as direct antecedents to ESG, which might explain the conflicting findings obtained in previous studies.

Moreover, within the ESG context, slack resources have predominantly been conceptualized through the lens of the RBV. While this viewpoint effectively explains the buffering and exploration-enhancing advantages of slack resources (Mishina et al., 2004; Nohria & Gulati, 1996), it overlooks the potential drawbacks from an agency-theory standpoint (Jensen, 1986; Leibenstein, 1969), such as fostering managerial self-opportunism or loosening control systems (Bourgeois, 1981; Nohria & Gulati, 1996). Thus, framing the discussion of resource availability in the ESG context within a more comprehensive theoretical framework can illuminate the potentially dual nature of slack resources in corporate sustainability.

Additionally, slack resources have predominantly been examined as a contingency factor in the relationship between ESG and organizational outcomes (e.g., Lin et al., 2019; Uyar et al., 2023; Zhao et al., 2024), overlooking the potential direct impact of slack resources on ESG. This research gap is significant as slack resources serve to reconcile shareholder and stakeholder interests (Shahzad et al., 2016), potentially acting as both drivers and barriers to ESG performance.

Finally, existent slack research tends to view CSR as a voluntary endeavor (e.g., Harrison & Coombs, 2012; Kang et al., 2016; McGuire et al., 1988), despite ESG performance being increasingly recognized for its financial materiality (e.g., by enhancing reputation capita or attracting investors) (Delgado-Ceballos et al., 2023; Jebe, 2019). Prior research has focused on slack resources in the context of CSR (e.g., Islam et al., 2021; Shang et al., 2023) and not the new context of ESG, which is potentially less voluntary and in all cases more comprehensive—consequently, more difficult to realize—than CSR. Therefore, it is essential to explore whether slack resources can also facilitate, at least in part, non-voluntary ESG activities. Considering these intertwined gaps, we pose the following research question: *Are slack resources drivers or barriers to ESG performance?*

To complement the RBV with an agency-theory lens, we propose that the relationship between slack resources and ESG should be studied under the contingency of CSR governance. Especially a dedicated CSR committee—composed of directors skilled to identify, formulate, and implement sustainability strategies and raise their importance in the boardroom (Fuente et al., 2017)—could lead to enhanced ESG performance through slack resources (Radu & Smaili, 2022). Further, CSR committees align with agency theory's premise that boards fulfill fiduciary responsibilities by monitoring managerial actions (Hillman & Dalziel, 2003). A distinct CSR committee can facilitate better board supervision of ESG-related decisions and guide managers toward more ethical and accountable conduct (Gill, 2008; Radu & Smaili, 2022), indicative of a shift from narrow shareholder focus to broader stakeholder consideration (Gill, 2008). The CSR committee could serve as a mechanism for directing slack resources toward ESG endeavors, primarily due to the consideration and monitoring of stakeholder interests at the strategic level (Eberhardt-Toth, 2017). Consequently, CSR committees have the potential to address ethical challenges surrounding the managerial allocation of slack resources by ensuring that these surplus resources are directed toward environmental, social, and ethical initiatives (Leyva-de la Hiz et al., 2019).

However, despite the potential benefits, the presence of a CSR committee might be merely symbolic, lacking the efficacy needed for effective managerial oversight of ESG issues (Chams & García-Blandón, 2019; Michelon & Parbonetti, 2012). Recognizing these potentially conflicting effects underscores the necessity to discern which aspect is pertinent when making investment decisions regarding slack resources. This argument leads to the second research question: *How does the presence of a CSR committee influence the relationship between slack resources and ESG?*

This study explores these two interconnected research questions using 12 year data from Nasdaq-100 firms. Grounded in an RBV framework, the results support the positive effect of slack resources on ESG. However, they also reveal that the presence of a CSR committee positively influences ESG but attenuates the positive association between slack resources and ESG performance.

We perform additional analyses to shed light on the underlying dynamics. Firstly, we demonstrate that the effect of slack resources on ESG is not linearly positive; instead, it follows an inverted U-shaped trajectory, where the effect of resource slack turns negative beyond an economically relevant threshold. Secondly, we reveal that the unabsorbed slack dimension predominantly shapes the slack effect, albeit its magnitude increases when both slack

dimensions interact in driving ESG. Thirdly, the impact of resource slack is discernible in the environmental and social dimensions of ESG but not in the governance dimension.

This study offers several contributions to management literature. We enrich the RBV by identifying slack resources as pivotal facilitators of ESG performance. Furthermore, the inverted U-shaped effect demonstrates a crucial tradeoff between resource slack and ESG performance: while resource availability fosters ESG at low slack levels, excessive slack resources increasingly impede ESG. Hence, our findings align with the documented inverted U-shaped relationship between slack resources and innovation (e.g., Chiu & Liaw, 2009; Heubeck & Meckl, 2024; Nohria & Gulati, 1996) and invigorate the discourse on slack resources in management and organizational domains (Lu et al., 2023; Mount et al., 2024). We present evidence supporting RBV arguments, indicating that these resources drive ESG at low slack levels. Conversely, our findings align with the agency view and its adjacent inefficiency arguments at higher slack levels, suggesting that high slack levels can pose barriers to ESG. Moreover, this study responds to recent research inquiries (Heubeck & Meckl, 2024; Lu et al., 2023; Mount et al., 2024) by emphasizing the primary influence of unabsorbed slack resources in the ESG context.

Furthermore, the findings underscore that slack effects are most pronounced in the environmental and social pillars of ESG, with no discernable effect in the governance realm. Thus, we foster a nuanced comprehension of the relative significance of slack resources for the pillars of ESG, echoing recent scholarly calls (Duque-Grisales & Aguilera-Caracuel, 2021; Shang et al., 2023).

Additionally, this study contributes to CSR governance literature by revealing that a CSR committee mitigates the ESG advantages of organizational slack, potentially due to the dual-edged nature of slack resources. Simultaneously, we demonstrate that CSR committees are ineffective in mitigating the adverse impact of slack resources on ESG performance at elevated slack levels. This result challenges conventional perspectives on CSR governance, highlighting the limited ability of CSR committees to influence resource allocation decisions concerning slack resources.

Taken together, our study contributes to the discourse on ethical business and sustainable investment behavior. We demonstrate that slack resources can support business ethics while, at the same time, revealing paradoxical tensions in both the relationship between slack resources and ESG as well as the contingency role of CSR committees. These findings hold significant implications for generating a business environment geared toward sustainable and ethical operations. Through this contribution, we shed light on the primary purpose of ethical business

in creating “environmental, social, and financial wealth, thereby making a positive contribution to the environment and society in a financially responsible manner” (Spiller, 2000, p. 151).

3.2 Theory Background and Hypotheses Development

3.2.1 Slack Resources and ESG Performance

Slack resources constitute a central component of the resource portfolio and encompass resources beyond the firm’s immediate operational needs (Cyert & March, 1963; Nohria & Gulati, 1996). The concept of slack resources can be traced back to the foundational works of resource-based theory by scholars like Penrose (1959). Through the lens of the RBV, firms can gain competitive advantages by leveraging their internal resources (Barney, 1991). Accordingly, firms endowed with superior resources—those possessing tangible or intangible assets characterized by value, rarity, inimitability, and non-substitutability (VRIN)—are positioned to pursue strategies and actions that confer competitive advantage (Barney, 1991; Dierickx & Cool, 1989). As determinants of resource availability, slack resources influence the extent to which firms can—and are willing to—allocate resources to projects of varying risk levels (Lu et al., 2023; Nohria & Gulati, 1996).

Slack resources are a focal construct in Cyert and March’s (1963) behavioral theory of the firm (BTOF) (Argote & Greve, 2007; Mount et al., 2024). Rooted in the surplus nature of slack resources, the BTOF emphasizes slack’s role in shielding organizations from internal (e.g., goal conflicts, performance pressure reduction) and external (e.g., economic downturns, competitive challenges) disruptions. Slack provides the necessary resources to address and manage these challenges while maintaining the stability of ongoing business operations (Argote & Greve, 2007; Bourgeois, 1981; Lu et al., 2023). Consequently, organizational theorists regard slack resources as pivotal drivers of organizational growth and performance (Lu et al., 2023).

These two theoretical perspectives elucidate the primary functions of slack resources in fostering ESG performance. Specifically, slack resources enable firms to fulfill two critical functions, both of which are highly pertinent in the ESG context. The first involves *risk-taking, exploration, and innovation*, as organizations endowed with surplus resources can more readily mitigate goal conflicts, lower acceptance thresholds, and tolerate delayed or uncertain returns from projects compared to less resource-endowed counterparts. From an RBV perspective, slack resources represent a reservoir of discretionary assets that can be channeled into uncertain endeavors (Bentley & Kehoe, 2020; Mishina et al., 2004; Shahzad et al., 2016), including those related to ESG initiatives.

The first function of slack resources encapsulates their role in inducing ESG initiatives by fostering risk-taking, exploration, and innovation, which is essential for companies embarking on long-term and risk-oriented ESG endeavors (Lu et al., 2023). While this perspective has traditionally dominated innovation research (e.g., Bentley & Kehoe, 2020; Tabesh et al., 2019), it is equally applicable to the ESG context. Investments in ESG projects extend beyond firms' core business responsibilities (Gillan et al., 2021; Jebe, 2019). Therefore, prioritizing ESG projects over other profitable endeavors could entail significant opportunity costs—potentially offsetting the benefits of ESG (Lu et al., 2023). However, firms with slack resources are better positioned to balance shareholder and stakeholder interests as they possess the resources to pursue both simultaneously— without needing to consider the potential trade-off between them (Lu et al., 2023). Existing research corroborates that mitigating financial constraints fosters CSR (e.g., Harrison & Coombs, 2012; Hong et al., 2012).

The second function of slack resources pertains to *flexibility and responsiveness*. Resource-rich firms are equipped to capitalize on emerging opportunities as they possess the necessary resources or can readily mobilize them. Consequently, slack resources enhance the adaptability and agility of firms (Bentley & Kehoe, 2020; Lu et al., 2023). In the ESG context, firms with ample slack resources can invest in new environmentally friendly technologies promptly, without protracted decision-making processes. Hence, firms with substantial slack resources are more inclined to embrace the uncertainty of change (Cyert & March, 1963; Nohria & Gulati, 1996), making investments in ESG more probable. These arguments suggest that due to the (1) enhanced *risk-taking, exploration, and innovation* and (2) increased *flexibility and responsiveness* associated with slack resources, firms with higher levels of slack are more inclined to seek out, devise, initiate, and realize ESG initiatives.

On the contrary, agency theorists offer a more pessimistic perspective on slack resources, suggesting that an abundance of slack can breed inefficiencies, encourage self-serving behavior, and foster managerial complacency (Bourgeois, 1981; Leibenstein, 1969; Nohria & Gulati, 1996). Consequently, slack resources may lead to heightened risk-aversion and prioritizing personal projects over decisions that enhance value or support stakeholders (Bourgeois, 1981; Jensen & Meckling, 1976; Nohria & Gulati, 1996). However, in the distinctive decision-making context of ESG, research indicates that self-interested managers often pursue initiatives that benefit stakeholders due to their desire for personal fulfillment, recognition, or reputation reinforcement (Masulis & Reza, 2015; Petrenko et al., 2016). Thus, higher levels of slack may also bolster ESG performance as the agency issues associated with slack—such as diminished oversight (Jensen, 1986; Leibenstein, 1969)—empower managers to advance their personal

agendas, including enhancing their reputation or expanding their social networks (Masulis & Reza, 2015).

In conclusion, we posit that ESG presents a fitting investment environment for slack resources due to the discretionary nature shared by both (Harrison & Coombs, 2012; Kang et al., 2016; McGuire et al., 1988). Furthermore, the escalating pressures toward ESG have transformed ESG from predominantly voluntary endeavors to compelling business imperatives owing to the financial significance they entail (Duque-Grisales & Aguilera-Caracuel, 2021; Jebe, 2019).

These arguments lead to the first hypothesis:

Hypothesis 1 Slack resources have a positive impact on ESG performance.

3.2.2 Moderating Effect of CSR Committee

The specific design of corporate governance structures establishes the framework for a firm's ethical, legal, and social conduct (Jamali et al., 2008). One specific CSR governance mechanism is establishing a separate CSR committee, which helps companies align their corporate governance with ESG objectives (Fuente et al., 2017; Spitzeck, 2009). Thus, corporate governance structures can be configured to support ESG initiatives.

Drawing from stakeholder theory, CSR committees are established to address stakeholder interests and aim to foster sustainability within businesses (Chams & Garcia-Blandon, 2019; Garcia-Sanchez et al., 2019). In addition, Burke et al. (2019) argue that CSR committees serve stakeholder and shareholder interests, recognizing that shareholders are increasingly concerned with business actions regarding employees and the environment. Furthermore, CSR committees are driven by creating value and attaining financial success, aligning with shareholders' expectations (Burke et al., 2019).

The CSR committee performs two primary functions to ensure it can effectively shape the board's decision-making. Firstly, it monitors the board to ensure alignment with the interests of various stakeholder groups and compliance with regulations and policies (Chams & Garcia-Blandon, 2019; Garcia-Sanchez et al., 2019). Secondly, it advises the board to improve decision-making, mitigate risks, and raise directors' general awareness of ESG considerations (Burke et al., 2019; Eberhardt-Toth, 2017; Fu et al., 2020). In the context of slack resources, the board of directors occupies a central role due to its authority in allocating resources toward ESG (Harrison & Coombs, 2012; Radu & Smaili, 2022). Furthermore, CSR committees shape employee behavior by setting CSR regulations and implementing incentives to promote responsible practices (Liao et al., 2015).

Empirical research has demonstrated that a CSR committee positively impacts the ESG performance of firms (Hussain et al., 2018). In their literature review, Velte and Stawinoga (2020) concluded that appointing a CSR committee impacts CSR performance positively. Birindelli et al. (2018) found that CSR committees significantly influence firms' ESG performance, particularly in communicating their environmental orientation to external stakeholders. However, there is little evidence of whether CSR affects all ESG subfactors equivocally. While Biswas et al. (2018) demonstrated that a CSR committee positively influences the social and environmental performance of Australian firms, Radu and Smaili (2022) found that CSR committees of Canadian firms only influence their social performance.

In addition, conflicting findings from other studies prompt a discussion regarding whether CSR committees may function more as symbolic gestures rather than influencing directors' decision-making processes (Chams & Garcia-Blandon, 2019). Research shows that firms with a CSR committee do not exhibit a greater propensity to reward environmental strategies than those lacking such structures (Berrone & Gomez-Mejia, 2009). Similarly, the presence of CSR committees does not lead to a significant increase in the quality of environmental disclosure (Rupley et al., 2012).

In light of these mixed results, we build on Harrison and Coombs (2012), who demonstrated that corporate governance mechanisms influence the relationship between slack resources and discretionary investments, to suggest that a CSR committee will use its influence to encourage the board of directors to allocate slack resources to ESG initiatives. The moderation effect occurs because the CSR committee recognizes the potential for maximizing value for stakeholders and shareholders. Thus, it provides the board of directors with knowledge on sustainability initiatives and guides managers' decision-making toward enhancing their firm's ESG performance (Michelon & Parbonetti, 2012). Therefore, we propose the following hypothesis:

Hypothesis 2 The presence of a CSR committee positively moderates the relationship between slack resources and ESG performance.

3.3 Method

3.3.1 Sample Selection and Data Collection

Our research sample consists of firms listed on the Nasdaq- 100 stock market index, which includes the 100 largest nonfinancial firms by market capitalization. This sample selection was deliberate, as these firms face considerable stakeholder pressures to engage in sustainable

investments due to their prominent position in the capital market, a trend also reflected in the ESG guidelines implemented by Nasdaq (Shields et al., 2021).

To ensure an adequate sample size, 2010 was chosen as the starting point for data collection, consistent with prior research that has also been selected this year to mitigate the post-effects of the Global Financial Crisis (Heubeck & Meckl, 2024). The data collection concluded in 2021, which was chosen to account for the one-year lag in ESG performance and represented the most recent data available for the year 2022.

An initial list of constituents was compiled from the historical lists of the Nasdaq-100 index spanning 2010–2021 to circumvent survivorship bias (Brown et al., 1992). We sourced data for these firms from LSEG Eikon, a premier financial and ESG data repository widely utilized in numerous previous studies (e.g., Delgado-Ceballos et al., 2023; Just et al., 2023). We collected data for the independent variables for the observation period, with ESG data lagged by one year. Our data collection led to 165 firms, comprising 1439 observations. Table 1 summarizes the total number of firms over the specified time frame.

3.3.2 Variable Measurement

ESG performance is measured using LSEG Eikon's ESG scores, which rank firms into percentiles (from 0 to 100) and assign corresponding grades (from D − to A +) (LSEG, 2023).[2] This percentile score quantifies a firm's ESG performance, with the ESG score from t + 1 utilized to address endogeneity concerns (Semadeni et al., 2022).

Table 1 Evolution of firm count over time

Year	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
Number of firms	97	105	122	121	125	130	128	122	127	128	130	108

Slack resources are measured by differentiating between absorbed and unabsorbed slack (Sharfman et al., 1988), utilizing averages from measures proposed by Wiseman and Bromiley (1996) and Lee and Wu (2016). *Absorbed slack*, also known as recoverable slack, is measured by the selling, general, and administrative (SG&A) expenses-tosales ratio, capturing resources integrated into the organizational design, such as personnel, training, or advertising costs. *Unabsorbed slack* comprises available slack (current ratio = current assets/current liabilities), reflecting disposable resources via the abundance of short-term working capital, and potential

slack (debt-to-equity ratio = equity/ liabilities), indicating a firm's financial structure and borrowing capacity.

The presence of a *CSR committee* is indicated by a dummy variable (assigned a value of 1 if present and 0 if absent) (Endrikat et al., 2021; Radu & Smaili, 2022). Following prior studies, we also incorporated several board and firm characteristics that may influence ESG performance. Table 2 provides an overview of these controls, outlining their definitions, the expected relationship with ESG performance, and exemplary studies.

3.4 Analysis and Results

3.4.1 Descriptive Statistics and Correlations

Table 3 illustrates the distribution of the sample across different industries. Most of the sample originates from the Manufacturing, Information, and Professional, Scientific, and Technical Services sectors.

Table 4 summarizes descriptive statistics, including means, standard deviations, and correlation coefficients. On average, firms have an ESG score of 53.51, corresponding to a 'B–' grade, indicating above-average ESG performance (LSEG, 2023), consistent with findings from other studies (e.g., Heubeck, 2024). The average scores for each ESG pillar indicate some variance, with firms scoring lowest on the environmental pillar (environmental pillar: 44.11; social pillar: 56.83; governance pillar: 55.01).

Firms, on average, possess 1.008 units of slack resources. The averages for absorbed and unabsorbed slack are 0.213 and 1.803, respectively, comprising a mean of 2.324 for available slack and 1.283 for potential slack. These figures align with previous research (e.g., Lee & Wu, 2016), except for the potential slack measure, which is approximately half. Firms in our sample have considerable short- and long-term slack resources due to a relatively low SG&A-to-sales ratio (absorbed slack), a high current ratio (available slack), and a debt-to-equity ratio indicating good financial health and relatively low investment risk (recoverable slack) (Lee & Wu, 2016).

Figure 1 Histogram: Slack resources

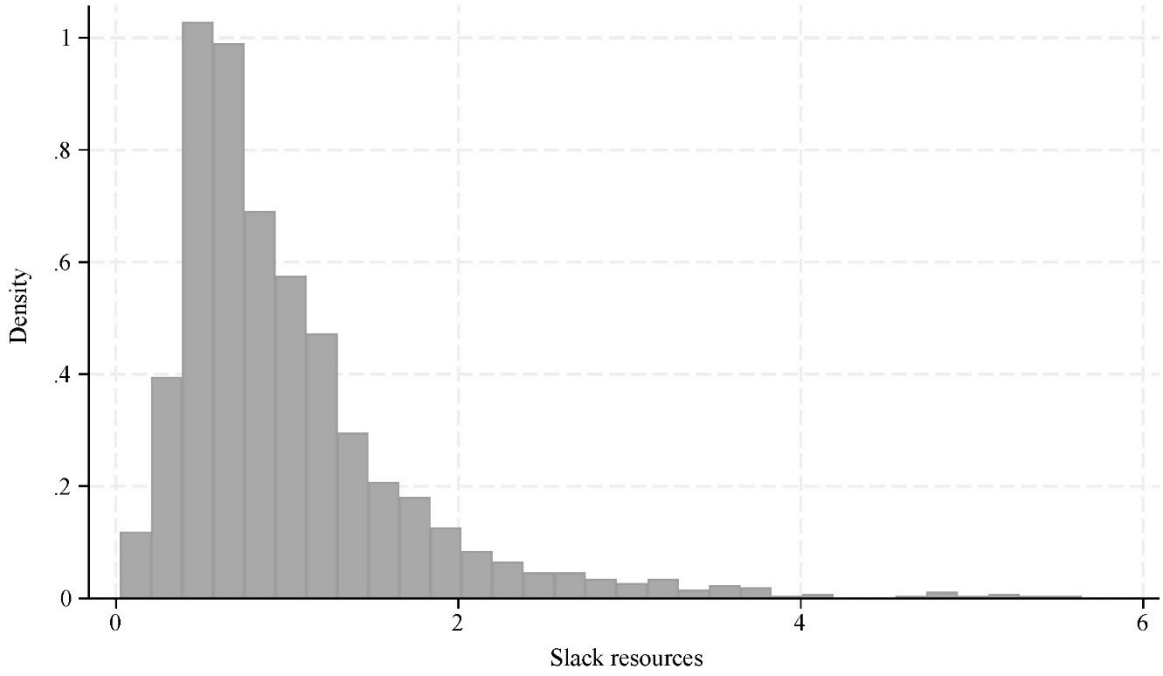


Figure 1 visualizes the distribution of the slack resource variable. The histogram indicates that most firms have relatively low slack levels due to the right-skewness and high density observed toward the left of the diagram. The slack values range from 0 to about 5 for most of the observations, except for two outliers removed from further analysis.[3]

Approximately, half of the firms (51.4%) have a CSR committee, consistent with findings from other studies (e.g., Derchi et al., 2021; Radu & Smaili, 2022). As summarized in Table 1, there has been an increasing trend in the adoption of CSR committees over time, despite some fluctuations. The later periods especially showcase a substantial increase. This rise might indicate a growing recognition of CSR committees among firms.

Table 4 also presents mean values and standard deviations for the control variables. We find statistically significant correlations between slack resources, CSR committee presence, and ESG performance. The coefficients indicate no multicollinearity between variables (Kennedy, 2008), which we will assess using variance inflation factors (VIFs) during regression analysis.

3.5 Statistical Procedure and Hypothesis Test Results

Based on prior studies (e.g., Heubeck, 2024; Lee & Wu, 2016), a panel data estimator is deemed more appropriate than ordinary least squares (OLS) regression due to the longitudinal structure of the data. The Breusch-Pagan Lagrange multiplier test confirmed the panel data structure,

warranting the use of a panel data estimator over OLS regression (Breusch & Pagan, 1980). The Durbin-Wu-Hausman test indicated that the fixed effects model suits the data (Greene, 2019). Detection of possible heteroscedasticity via the modified Wald test led to the usage of heteroscedasticityrobust standard errors (Greene, 2019). The pre-estimation assessments revealed that a fixed effects panel data estimator with heteroscedasticity-robust standard errors offers the best-fit estimation approach. Standard errors were clustered at the firm level.

Table 5 presents the regression results, which remain unaffected by multicollinearity, as evidenced by VIF tests and correlation coefficients below conventional thresholds (Johnston et al., 2018; Kennedy, 2008). We executed regression models hierarchically, with Model 1 comprising the control variables, Model 2 adding the slack resource variable (Hypothesis 1), Model 3 including the CSR committee variable, and Model 4 adding the interaction between slack resources and CSR committee (Hypothesis 2). R2 values exceed conventional levels across all models. The hierarchical regression results demonstrate that study variables contribute to the research model's explanatory power, as additional variables enhance explanatory capacity compared to the baseline model ($\Delta R2 = 0.127$).

Hypothesis 1 posited a positive direct effect of slack resources on ESG performance. Regression results support this hypothesis, indicating a positive and significant coefficient ($b = 1.863$, $p = 0.053$). Thus, slack resources foster firms' ESG performance.

Hypothesis 2 suggested that the presence of a CSR committee amplifies the positive effect of slack resources on ESG performance. While the interaction between slack resources and the CSR committee is significant, the coefficient is negative ($b = -2.185$, $p = 0.024$). Consequently, Hypothesis 2 is rejected due to an opposite effect, implying that the positive impact of slack resources on ESG performance diminishes in firms with a CSR committee.

Table 2 Control variables: Definition, expected relationship, and exemplary references

Variable	Definition	Expected effect on ESG performance	Exemplary studies
(1) Board size	Number of board members	*Positive* due to increased diversity in perspectives	He and Jiang (2019)
(2) Board independence	Percentage of independent directors	*Positive* due to more efficient monitoring	Radu and Smaili (2022)

(3) Board meeting number	Number of board meetings	*Positive* due to increased board activity and socialization processes	Birindelli et al. (2018); Radu and Smaili (2022)
(4) Board meeting attendance	Average attendance of directors at board meetings	*Positive* due to increased board activity and socialization processes	Heubeck and Meckl (2024)
(5) CEO duality	Dummy variable, coded with values of 1 if the CEO is the board chairman, 0 if otherwise	*Negative* due to decreased monitoring	Endrikat et al. (2021); Radu and Smaili (2022)
(6) Board gender diversity	Percentage of female directors in relation to total board size	*Positive* due to increased diversity and greater stakeholder concern	Heubeck (2024)
(7) Director tenure	Average tenure of board members	*Negative* due to decreased monitoring and increased change inertia	Bravo and Reguera-Alvarado (2017)
(8) Director affiliations	Average number of external corporate affiliations of board members	*Positive* due to increased resource access and information exchange	Barroso-Castro et al. (2016)
(9) Director skills	Percentage of directors with an industry-specific or financial background	*Positive* due to increased monitoring and knowledge	He and Jiang (2019); Heubeck (2024)
(10) Management compensation	Total management compensation measured in 1 million USD	*Positive* due to increased monitoring and better-skilled directors	Ryan and Wiggins (2004)
(11) Sustainability compensation incentives	Dummy variable, coded with values of 1 if senior executives' compensation is linked to CSR, sustainability, or health and safety targets, 0 if otherwise	*Positive* due to greater incentives to promote sustainability	Cordeiro et al. (2000)

(12) Firm age	Years since incorporation	*Positive* due to increased legitimacy pressures	D'Amato and Falivena (2020)
(13) Firm size	Natural logarithm of the total number of employees	*Positive* due to increased stakeholder pressure	D'Amato and Falivena (2020); Heubeck (2024)
(14) Firm performance	Return on equity	*Positive* due to increased resource availability and support for ESG initiatives	Huang (2021)
(15) R&D intensity	R&D spending to sales ration; missing R&D values replaces with 0 (Koh and Reeb 2015)	*Positive* due to direct or spillover benefits for sustainable business operations	J. Xu et al. (2021)
(16) Industry affiliation	Dummy variables for two-digit NAICS codes	Captures potential differences between industries	Radu and Francoeur (2017)
(17) Years	Dummy variables for observation years	Captures potential differences between years	Just et al. (2023); Radu and Smaili (2022)

Table 3 Distribution of firms in the different industries

Industry			
Code	Description	Number of firms	Percentage
21	Mining, Quarrying, and Oil and Gas Extraction	2	1.21
22	Utilities	2	1.21
31–33	Manufacturing	56	33.94
42	Wholesale Trade	4	2.42
44–45	Retail Trade	15	9.09
48–49	Transportation and Warehousing	6	3.64
51	Information	45	27.27
52	Finance and Insurance	3	1.82
53	Real Estate and Rental and Leasing	1	0.61
54	Professional, Scientific, and Technical Services	21	12.73
56	Administrative and Support and Waste Management and Remediation Services	5	3.03
72	Accommodation and Food Services	3	1.82
81	Other Services (except Public Administration)	2	1.21
Total (2010–2021)		165	100.00

3.6 Additional and Robustness Tests

3.6.1 Nonlinear Slack Effect

The data analysis has yielded somewhat inconsistent results, as indicated by the negative significant correlation between slack resources and ESG performance observed during descriptive analysis, contrasting with the positive significant effect of slack resources on ESG performance revealed in the regression analysis. These findings suggest a potential nonlinear relationship between slack resources and ESG performance, consistent with insights from prior studies in other contexts (e.g., George, 2005; Heubeck & Meckl, 2024; Tan & Peng, 2003).

We investigated the presence of a nonlinear effect by incorporating the squared variable of slack resources into the regression model. Our analysis provides initial support for an inverted U-shaped impact of slack on ESG, with the linear effect showing a positive and significant coefficient (b = 5.858, p = 0.005) and the nonlinear effect demonstrating a negative and significant coefficient (b = − 1.023, p = 0.004) (Haans et al., 2016). To substantiate this relationship, we employed a three-stage procedure (Lind & Mehlum, 2010). Firstly, Sasabuchi's (1980) test affirms the inverse U-shaped relationship (p = 0.005), with the joint significance of the slack variables given (p = 0.016). Secondly, the turning point of this inverse U-shaped relationship is 2.863. Thirdly, utilizing Fieller's standard errors, we calculated the 95% confidence interval as [0.025; 5.640]. Thus, the extreme point lies within the confidence interval. Importantly, these findings were robustly supported by the joint significance of the control variables (p = 0.000) and all model variables (p = 0.000).

Thus, we find that the actual slack effect on ESG is inverse U-shaped. Essentially, these findings offer an alternative interpretation of the impact of slack resources on ESG performance by indicating that the effect is not consistently positive; instead, it remains positive until reaching 2.863 units of slack, after which it becomes harmful.

We further examined the moderation effect of the CSR committee on the inverse U-shaped relationship between slack resources and ESG. Contrary to earlier results, the moderation effect of the CSR committee on this relationship is insignificant (b = 0.097, p = 0.857). Hence, we conclude that CSR committees cannot effectively mitigate the adverse impact of slack resources at elevated slack levels.

Table 4 Descriptive statistics and correlations

Notes: $N = 1{,}439$; $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

		Mean	*Std. Dev.*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	ESG performance	53.509	0.519	1																	
2	Slack resources	1.008	0.019	–0.118***	1																
3	CSR committee	0.514	0.013	0.621***	–0.025	1															
4	Board size	10.114	0.056	0.311***	–0.212***	0.266***	1														
5	Board independence	79.374	0.304	0.331***	–0.048*	0.247***	0.044*	1													
6	Board meeting number	7.894	0.101	0.080***	–0.030	0.057**	0.038	0.074***	1												
7	Board meeting attendance	78.585	0.208	0.227***	–0.083***	0.142***	0.004	0.016	–0.049*	1											
8	CEO duality	0.601	0.013	–0.093***	0.031	–0.088***	–0.020	–0.077***	–0.130***	0.038	1										
9	Board gender diversity	19.457	0.293	0.428***	–0.116***	0.373***	0.234***	0.273***	0.113***	0.084***	–0.072***	1									
10	Director tenure	9.351	0.102	–0.029	0.109***	–0.151***	–0.042	–0.188***	–0.206***	0.074***	0.236***	–0.210***	1								
11	Director affiliations	0.986	0.017	0.056**	–0.188***	0.137***	0.137***	0.133***	0.095***	0.019	–0.225***	0.141***	–0.312***	1							
12	Director skills	57.828	0.517	–0.024	0.112***	–0.093***	–0.136***	–0.056**	–0.025	–0.051*	0.073***	–0.117***	0.105***	–0.020	1						
13	Management compensation	42.022	1.988	0.100***	–0.041	0.090***	0.128***	–0.019	0.118***	–0.051*	–0.011	0.091***	–0.027	0.029	–0.032	1					
14	Sustainability compensation incentives	0.252	0.011	0.310***	–0.026	0.227***	0.135***	0.149***	–0.033	0.120***	0.034	0.077***	–0.058**	0.065**	0.032	–0.008	1				
15	Firm age	3.212	0.025	0.368***	–0.138***	0.192***	0.211***	0.225***	–0.051*	0.094***	0.047*	0.147***	0.279***	–0.066**	0.019	–0.030	0.186***	1			
16	Firm size	9.596	0.036	0.476***	–0.277***	0.420***	0.428***	0.002	–0.008	0.122***	–0.008	0.246***	0.071***	0.054**	–0.167***	0.186***	0.174***	0.319***	1		
17	Firm performance	0.089	0.068	0.054**	0.026	0.079***	0.037	–0.012	0.137***	–0.008	–0.056**	–0.001	0.009	0.026	–0.007	0.008	–0.009	0.044*	0.009	1	
18	R&D intensity	0.119	0.008	–0.021	0.205***	–0.049*	–0.099***	0.059**	0.007	–0.074***	–0.051*	–0.034	–0.045*	0.013	0.014	0.003	–0.033	–0.142***	–0.250***	–0.009	1

3.6.2 Slack Resource Dimensions

We conducted additional analyses using unabsorbed and absorbed slack measures to explore how the underlying slack resource dimensions affect ESG. Our findings reveal that unabsorbed slack significantly and positively affects ESG ($b = 0.907$, $p = 0.057$), whereas absorbed slack positively affects ESG, albeit statistically insignificant ($b = 6.875$, $p = 0.200$). These findings suggest that the two slack types vary significantly in their effect on ESG, with unabsorbed slack (discretionary resources) facilitating ESG and absorbed slack (non-discretionary resources) not affecting ESG. Furthermore, our supplementary results highlight the possibility of a combined and amplified positive effect on ESG stemming from the interplay between these two slack types.

Given the inverted U-shaped relationship between slack resources and ESG, we investigated whether this nonlinear pattern extends to the underlying unabsorbed and absorbed slack types. Our analysis confirms an inverted U-shaped effect for unabsorbed slack due to a positive and significant linear effect ($b = 2.891$, $p = 0.007$) and a negative and significant nonlinear effect ($b = -0.239$, $p = 0.015$). We also find that this relationship is robust (Lind & Mehlum, 2010), supported by a significant Sasabuchi test ($p = 0.025$) and an extreme point (6.053) within the 95% confidence interval [− 0.006; 11.115]. Similarly, the joint significance tests yield significant results, further confirming the robustness of the inverse U-shaped relationship.

Conversely, while the direction of effects remains consistent for absorbed slack, we cannot confirm an inverted U-shaped effect as evident from an insignificant linear ($b = 23.233$, $p = 0.122$) and nonlinear effect ($b = -17.412$, $p = 0.122$). Consequently, absorbed slack in isolation does not exhibit a significant linear or nonlinear effect on ESG.

Our findings suggest that the underlying unabsorbed slack dimension primarily drives the inverted U-shaped effect of slack resources on ESG. However, when both types of slack work together, their combined effect surpasses the isolated impact of unabsorbed slack. Thus, our study provides compelling evidence of the interplaying role of these two slack types in shaping ESG outcomes.

3.6.3 ESG Pillars

Given the multidimensionality of ESG, we also tested the influence of slack resources on the individual ESG pillars to determine if the effect of slack might be driven by one of the three ESG pillars.

We find that the inverse U-shaped effect of slack resources on the environmental pillar is also present due to a linear positive and significant effect ($b = 8.285$, $p = 0.005$); a nonlinear negative

and significant effect ($b = -1.479$, $p = 0.007$); the joint significance of the slack ($p = 0.009$) and model variables ($p = 0.000$); and a significant test for the presence of the inverse U-shape ($p = 0.011$). The extreme point (2.802) lies within the 95% confidence interval [0.025; 5.640], thus providing evidence for an inverted U-shaped slack resource–environmental pillar relationship.

We also find that the inverse U-shaped relationship between slack resources and the social pillar, owing to a positive and significant linear coefficient ($b = 7.209$, $p = 0.004$), a negative and significant nonlinear coefficient ($b = -0.980$, $p = 0.016$), the joint significance of the slack ($p = 0.004$) and model variables ($p = 0.000$); and a significant test for the presence of the inverse U-shape ($p = 0.056$). The extreme point (3.680) lies within the 95% confidence interval [0.025; 5.640]. Therefore, in line with our main results, we also find evidence for an inverted U-shaped relationship between slack resources and the social pillar.

In contrast, slack resources do not influence governance performance, as indicated by the insignificant linear ($b = 2.068$, $p = 0.491$) and nonlinear effects ($b = -0.604$, $p = 0.277$). This result is further supported by the nonsignificant test for an inverse U-shaped relationship between slack resources and ESG ($p = 0.247$).

These additional analyses demonstrate that the slack effect is primarily driven by the effects on the underlying environmental and social pillars of ESG. Conversely, we cannot demonstrate a significant relationship between slack resources and the governance pillar.

3.6.4 Excluding Industries

To ensure the robustness of our results, we excluded financial and insurance firms from the sample (3 firms excluded), given their unique characteristics, including capital structure, as highlighted in prior ESG research (e.g., Chen & Xie, 2022; Yuan et al., 2022). Assessing the hypotheses with the modified sample ($N = 1410$; 162 firms) yielded robust results.

Specifically, Hypothesis 1 is supported due to the positive and significant effect of slack resources on ESG ($b = 1.811$, $p = 0.060$). The moderation effect proposed in Hypothesis 2 also is negative and significant ($b = -2.068$, $p = 0.035$). The inverted U-shaped relationship between slack resources and ESG for the modified sample is also confirmed, with a linear positive and significant effect ($b = 5.640$, $p = 0.007$), a nonlinear negative and significant effect ($b = -0.981$, $p = 0.007$), a significant test for the presence of the inverse U-shape relationship ($p = 0.007$), and an extreme point (2.874) within the bounds of the 95% confidence interval [0.025; 5.640].

The robustness of the results persisted even when firms from other industries with unique characteristics influencing ESG outcomes were excluded from the analysis. Specifically, when

excluding the sector Mining, Quarrying, and Oil and Gas Extraction (NAICS 21), the positive effect of slack resources on ESG ($b = 2.015$, $p = 0.042$) persisted and was negatively moderated by the presence of a CSR committee ($b = -2.233$, $p = 0.023$). The inverted U-shaped effect of slack resources on ESG also holds (slack resources: $b = 6.324$, $p = 0.003$; slack resources squared: $b = -1.091$, $p = 0.003$; inverse U-test: $p = 0.004$). The coefficients were slightly larger and more significant, underscoring the robustness of the results across different sample definitions, as suggested by previous research (e.g., Elbardan et al., 2023).

4.6.5 Exclude the COVID-19 Years

We assessed the potential impact of the COVID-19 pandemic on the results by excluding all observations from the years 2020 and 2021, which reduced the sample size to 1203 across 160 firms. The findings remained consistent with the main results, with a positive and significant effect of slack on ESG ($b = 1.881$, $p = 0.052$), negative and significant moderation effect of CSR committee ($b = -2.190$, $p = 0.081$), and a significant inverted U-shaped effect of slack on ESG (slack resources: $b = 5.573$, $p = 0.008$; slack resources squared: $b = -0.877$, $p = 0.019$, inverted U-test: $p = 0.035$; extreme point = 3.175; 95% confidence interval: 0.025, 5.640).

As demonstrated in Table 1, the time series of CSR committee adoption shows a sharp rise in 2020 and 2021. Therefore, by excluding these years, we can also rule out the possibility that a potential time break in the data has affected our results.

Table 5 Main regression results

ESG performance	Model 1		Model 2		Model 3		Model 4	
	Coefficient	Rob. Std. Error	Coefficient	Rob. Std. Error	Coefficient	Rob. Std. Error	Coefficient	Rob. Std. Error
Study variables								
Slack resources			1.863*	0.954			2.484**	1.047
CSR committee					7.480***	1.265	9.668***	1.644
Slack resources x CSR committee							–2.185**	0.960
Control variables								
Board size	0.115	0.304	0.066	0.307	0.083	0.276	0.043	0.279
Board independence	0.099	0.060	0.103*	0.061	0.094*	0.056	0.092	0.057
Board meeting number	–0.001	0.123	0.006	0.122	0.006	0.109	0.008	0.107
Board meeting attendance	–0.021	0.069	–0.013	0.068	–0.033	0.063	–0.035	0.062
CEO duality	–1.395	1.368	–1.494	1.346	–1.664	1.294	–1.509	1.270
Board gender diversity	0.170***	0.060	0.167***	0.061	0.134**	0.057	0.138**	0.057
Director tenure	0.055	0.227	0.029	0.227	0.042	0.216	0.029	0.217
Director affiliations	–3.670***	1.289	–3.481***	1.297	–3.597***	1.228	–3.514***	1.241
Director skills	0.045**	0.021	0.046**	0.021	0.048**	0.020	0.047**	0.020
Management compensation	0.002	0.002	0.002	0.002	0.003*	0.002	0.003*	0.002
Sustainability compensation incentives	3.094***	0.785	3.084***	0.784	3.249***	0.808	3.329***	0.805
Firm age	2.624*	1.352	2.649**	1.340	2.557**	1.284	2.510*	1.275
Firm size	3.694***	1.026	4.022***	1.037	2.596***	0.927	2.881***	0.930
Firm performance	0.186**	0.085	0.187**	0.084	0.148**	0.075	0.145*	0.075
R&D intensity	–2.266**	0.935	–2.473***	0.721	–1.817*	0.966	–2.302***	0.812

Constant	–0.293	12.584	–5.720	12.911	8.783	11.585	4.326	11.838
Year controls	YES		YES		YES		YES	
Industry controls	YES		YES		YES		YES	
R^2_{within}	0.555		0.558		0.583		0.588	
$R^2_{between}$	0.376		0.376		0.528		0.521	
$R^2_{overall}$	0.367		0.364		0.500		0.494	
F	6.55		6.97		10.36		10.16	
Sig.	0.000		0.000		0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 1,439, number of firms = 165, $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

3.6.6 More Conservative Control Variables

We ensured that the selection of control variables did not bias our results, potentially through overcontrolling. To address this, we excluded variables that could introduce endogeneity to the model. We conducted several additional tests using more conservative control variables. For instance, we omitted potentially endogenous controls such as board gender diversity, management compensation, and sustainability compensation incentives. The model without these controls still yielded consistent results for our study variables. Specifically, the positive effect of slack resources (b = 1.863, p = 0.054) on ESG (Hypothesis 1) was also positive, with an increased statistical significance in the modified model (b = 1.950, p = 0.039). We also assessed Hypothesis 2 with more conservative control variables, yielding consistent results with the following coefficients: slack resources (b = 2.392, p = 0.022), CSR committee (b = 9.487, p = 0.000), and the interaction term (b = − 1.872, p = 0.049). Additionally, we tested the model by excluding variables such as board independence, board meeting attendance, director affiliations, director skills, and R&D intensity, which might introduce causal interference issues. We obtain robust results when controlling for a minimum of relevant governance factors that are likely exogenous (board size, CEO duality, board independence, number of board meetings, director tenure) and firm factors (age, size, performance). We also obtain consistent results when excluding further governance or firm variables down to a minimum of likely exogenous control variables (board independence, firm size, firm age). In this model, we find the same positive and significant effect of slack resources on ESG as proposed in Hypothesis 1 (b = 1.914, p = 0.050) and the negative and significant moderation effect in opposition to Hypothesis 2 (b = − 1.807, p = 0.070).

Our results remained robust across these alternative model specifications, demonstrating a positive and statistically significant direct effect of slack resources on ESG, negatively moderated by the presence of a CSR committee.

3.6.7 Endogeneity Assessment

Following previous research (e.g., Harrison & Coombs, 2012; Tabesh et al., 2019), we implemented several countermeasures against endogeneity. We used a 1 year lagged dependent variable and panel data study design to address endogeneity concerns due to reverse causality. We tested for reverse causality by regressing ESG performance on 1 year lagged slack resources. The nonsignificant effet ($b = 0.001$, $p = 0.681$) rules out a recursive relationship, thus effectively remedying reverse causality concerns.

Besides reverse causality, endogeneity can also stem from unobserved heterogeneity (Wooldridge, 2002). We avoided biased estimates and can draw robust causal evidence from the results by implementing time-constant variables as fixed effects in the regression models (Greene, 2019; Shahzad et al., 2016). Further, the unobserved variable problem was countered by controlling for various firm and board characteristics based on prior related research and testing for more conservative sets of controls.

Following prior studies (e.g., Elbardan et al., 2023; Wang et al., 2017), we addressed potential endogeneity and omitted variable bias using an instrument variable (IV) regression analysis for panel data based on the 2SLS approach (Angrist & Krueger, 2001). We employed one-year lagged values of CSR committee as an IV, given their lack of correlation with the error term and potential correlation with the endogenous variable (Elbardan et al., 2023). The fixed effects (within) IV regression with robust standard errors clustered at the firm level provide evidence against endogeneity. The 2SLS IV fixed effects regression, with robust standard errors clustered at the firm level, indicated no endogeneity issues. Table 6 summarizes three main models calculated using the 2SLS IV fixed effects regression models. In Model 1, we can establish the absence of endogeneity in our research model as the endogeneity test shows that CSR committee is exogenous (p = 0.424). The lagged CSR committee variable has a significant positive effect in the first-stage model (b = 0.545, p = 0.000), and the F value of first-stage regression is above the recommended threshold of 10 and statistically significant (p = 0.000).

We performed two additional 2SLS fixed effects IV regressions to confirm the robustness of our results (see Table 6). Model 2 demonstrates that the inverted U-shaped effect of slack resources on ESG holds. Similarly, Model 3 establishes the negative and statistically significant moderation effect of CSR committee. Therefore, the 2SLS IV fixed effects regressions demonstrate that CSR committee is exogenous in our model. Nevertheless, we cannot completely rule out the absence of endogeneity in our research, showcasing the need for more causal research along the proposed relationships.

Table 6 2SLS IV fixed effects regression results

ESG performance	Model 1		Model 2		Model 3	
	Coefficient	Rob. Std. Error	Coefficient	Rob. Std. Error	Coefficient	Rob. Std. Error
Study variables						
Slack resources			5.301**	2.153	3.143**	1.255
Slack resources squared			–0.869**	0.358		
CSR committee	8.486***	2.234	8.067***	2.232	11.323***	3.700
Slack resources x CSR committee					–3.077*	1.679
Control variables						
Board size	0.171	0.262	0.121	0.264	0.125	0.267
Board independence	0.073	0.059	0.064	0.059	0.068	0.060
Board meeting number	0.010	0.109	0.014	0.107	0.017	0.105
Board meeting attendance	–0.002	0.068	0.004	0.067	–0.011	0.067
CEO duality	–1.998	1.312	–2.142*	1.270	–1.766	1.273
Board gender diversity	0.138**	0.058	0.145**	0.058	0.148**	0.058
Director tenure	0.137	0.228	0.101	0.226	0.120	0.230
Director affiliations	–3.532***	1.363	–3.416**	1.367	–3.519***	1.364
Director skills	0.065***	0.021	0.063***	0.021	0.064***	0.021
Management compensation	0.008	0.005	0.006	0.005	0.007	0.005
Sustainability compensation incentives	2.896***	0.806	2.879***	0.809	2.980***	0.806
Firm age	2.297*	1.341	2.610**	1.324	2.304*	1.340
Firm size	1.903*	1.049	2.052**	1.037	2.211**	1.044
Firm performance	0.151*	0.086	0.152*	0.086	0.147*	0.084
R&D intensity	–0.973*	0.498	–1.462***	0.555	–1.866***	0.558
Constant	16.115	11.484	11.905	11.486	11.950	11.616

Year controls	YES	YES	YES
Industry controls	YES	YES	YES
R^2_{within}	0.563	0.569	0.568
$R^2_{between}$	0.487	0.444	0.463
$R^2_{overall}$	0.497	0.478	0.487
Wald Chi^2	589.06	666.94	628.72
Sig.	0.000	0.000	0.000

Notes: Fixed effects (within) IV regression with robust standard errors clustered at the firm level, IV = one-firm-year lagged CSR committee, number of observations = 1,223, number of firms = 160, $^{***}p < 0.01$, $^{**}p <$

3.7 Discussion

Our research findings confirm the hypothesis that slack resources significantly impact ESG performance. However, our analysis reveals a nuanced pattern: the influence of slack resources on ESG performance follows a nonlinear, inverse U-shaped trajectory. Additionally, we did not find evidence supporting the hypothesis that a CSR committee strengthens the positive relationship between slack resources and ESG performance. Our results suggest that the presence of a CSR committee attenuates the positive impact of slack resources on ESG performance. These findings carry significant theoretical and practical implications, which we will explore in subsequent sections.

3.7.1 Slack Resources and ESG

We contribute to the slack resource theory by applying the double-edged notion of slack resources to the contemporary realm of ESG performance. The inverse U-shaped relationship, extensively discussed in prior literature (e.g., Chiu & Liaw, 2009; George, 2005), notably in contexts like innovation (e.g., Heubeck & Meckl, 2024; Nohria & Gulati, 1996), remains central to our analysis. Our study underscores that the impact of slack resources on ESG performance hinges on the relative level of slack resources. At low levels of slack, we find support for resource-based arguments due to the facilitating role of slack resources. Thus, our research enriches the RBV (e.g., Barney, 1991; Dierickx & Cool, 1989) by revealing that slack resources can qualify as VRIN resources that infer competitive advantage in ESG. Additionally, we contribute to the BTOF (Cyert & March, 1963) by highlighting the pivotal function of slack resources in resolving conflicts of interest, particularly between shareholders and stakeholders, which are pertinent in the ESG domain. In essence, we demonstrate that lower levels of slack foster ESG performance by *fostering risktaking, exploration, innovation*, and *enhancing flexibility and responsiveness*.

At higher levels of slack, we find support for arguments rooted in agency theory. Our analysis of the inverted U-shaped effect reveals that an excess of slack resources— beyond the optimal point—diminishes firms' efforts toward ESG initiatives. This outcome may be attributed to inefficiency, opportunism, and risk-aversion factors (e.g., Bourgeois, 1981; Jensen & Meckling, 1976; Nohria & Gulati, 1996). Consequently, the assumption that self-interested managers prioritize ESG investments due to reputational concerns appears unfounded. Even if this argument were partially valid, the detrimental effects of higher amounts of slack resources outweigh any potential benefits. These findings suggest that an abundance of slack may lead to suboptimal investment behavior in ESG endeavors or diminishing ESG returns from additional

investments. Lower levels of slack, in contrast, may compel managers to meticulously assess and prioritize promising ESG initiatives while encouraging more vigilant monitoring by the board of directors.

We contribute to the literature by examining the dynamics of various slack types, particularly absorbed and unabsorbed slack resources, in influencing ESG outcomes (e.g., Marlin & Geiger, 2015; Mount et al., 2024; Tan & Peng, 2003). We find that unabsorbed slack resources drive an inverse U-shaped effect on ESG, highlighting their discretionary nature and significant association with ESG outcomes, while absorbed slack shows no significant association (e.g., Islam et al., 2021; Shahzad et al., 2016; Wasiuzzaman et al., 2022; Xu et al., 2014). Our findings suggest that the impact of slack on ESG can vary depending on the type and level of slack resources. Additionally, we do not find an inverted U-shaped effect of absorbed slack on ESG performance, possibly due to differences in research contexts and outcome variables (Shang et al., 2023). Overall, our study underscores the dual nature of discretionary resources in relation to ESG considerations.

Furthermore, our research contributes by revealing that the effect of slack resources varies across different dimensions of ESG. While slack resources exert the most pronounced influence on environmental and social performance, they exhibit no discernible impact on governance performance. This phenomenon may stem from firms' constrained ability to promptly allocate slack resources to initiatives involving management structure, shareholder rights, or overall CSR strategy.

In summary, our study significantly contributes to the ongoing discourse surrounding slack resources and ESG by bridging these two distinct areas of inquiry through our theoretical framework. This integration represents a crucial step forward in comprehending the determinants of ESG performance and reigniting discussions on the role of slack resources within the management domain.

3.7.2 Contingency Role of the CSR Committee

Our empirical investigation into the contingent effects of the CSR committee reveals two contradicting influences related to ESG. Fundamentally, the results suggest a direct positive impact of the CSR committee on firms' ESG performance, consistent with previous studies (e.g., Birindelli et al., 2018; Radu & Smaili, 2022). Viewing it through an agency lens, the benefits of a separate CSR committee stem from its monitoring and advisory roles, especially in directing managers who can benefit from the expertise of the environmentally conscious CSR committees (Berrone & Gomez-Mejia, 2009). Our findings also reinforce stakeholder theory,

as the CSR committee endeavors to fulfill the interests of diverse stakeholder groups urging firms to enhance their sustainability performance (Michelon & Parbonetti, 2012).

However, our findings also demonstrate a detrimental effect of the CSR committee on the relationship between slack resources and ESG performance, indicating that its presence does not encourage firms to invest additional slack resources in enhancing their ESG performance. Consequently, significant questions arise regarding the ability of this subcommittee to influence and steer management decisions. Previous research suggests that CSR committees are purely symbolic due to reputational concerns; therefore, they are not linked to enhanced sustainability performance (Chams & Garcia-Blandon, 2019; Rodrigue et al., 2013). Although this rationale may partially explain our findings, we believe other factors may contribute to the negative moderation effect of CSR committees on the relationship between slack resources and ESG performance. It is plausible that CSR committees lack sufficient authority to influence board or executive decisions on slack resources, serving primarily as advisory bodies whose proposals may not always be followed (Berrone & Gomez- Mejia, 2009). Alternatively, CSR committees may focus more on investing additional slack resources in preventing CSR misconduct than actively promoting ESG initiatives (Rodrigue et al., 2013). Thus, the presence of a CSR committee may not necessarily indicate greenwashing or deception but rather a lack of empowerment to allocate slack resources to ESG initiatives. Another explanation could be that CSR committees have a negative perception of slack resources due to the detriments of high slack levels. Thus, CSR committees may restrain slack investment in ESG, even at low slack levels. We believe this argument could also be linked to the elusive nature of slack resources (Mount et al., 2024). Assessing the level of slack to determine the relative extent of slack (e.g., low vs. high) could be a non-routine and challenging task for the CSR committee. To avoid ESG detriments, the CSR committee may strive to actively reduce the investment of slack resources into ESG—irrespective of the slack level. At the same time, our findings demonstrate that the CSR committee is ineffective in reducing the ESG detriments of high slack levels. Therefore, we provide partial evidence that the pure establishment of a CSR committee is insufficient to mitigate the adverse effects of slack. The CSR committee's composition could reflect the root cause, as adept committee members might mitigate the adverse impacts of surplus resources by intensifying oversight. Further investigation is warranted to examine how various attributes of CSR committees could influence the slack resources–ESG performance relationship.

Given these findings, as agency theory suggests, our research indicates that sustainability governance mechanisms like CSR committees positively influence ESG performance.

Therefore, by revealing that the advantageousness of CSR committees depends on the specific context, we pave the way for future research to unpack this subcommittee's tasks and makeup as well as gauge the firm's underlying rationale for installing a CSR committee.

3.7.3 Managerial Implications

Our study holds significant implications for managers looking to enhance their firm's ESG performance. The first set of implications revolves around the amount of slack resources. Our findings substantiate a general positive effect of slack resources; therefore, we strongly advocate for managers to allocate especially unabsorbed slack resources toward improving ESG performance. However, managers must exercise great caution when determining the amount of slack resources to invest in ESG initiatives. Our study reveals that lower levels of slack positively influence ESG performance, reaching an optimum point beyond which increasing slack resources diminishes ESG performance. In light of this dual effect, we recommend that managers allocate only a modest amount of slack resources to environmental and social initiatives to enhance ESG performance. Therefore, it is crucial for managers to meticulously select ESG investment initiatives, ensuring they are specifically targeted at enhancing overall ESG performance. Investing additional slack resources into environmental and social initiatives may not yield improvements and might be better allocated to other promising causes. Consequently, the findings highlight that the vigilant monitoring of the amount of slack resources invested in ESG initiatives is imperative, especially relevant to the environmental and social pillars, as these are highly affected by slack resources.

The second set of implications pertains to utilizing governance mechanisms to boost ESG performance. Specifically, establishing a CSR committee by the board proves valuable in this regard, significantly enhancing ESG performance. Such committees oversee management practices and provide expertise in mitigating misconduct, enhancing overall ESG performance. Firms should contemplate appointing environmentally and socially conscious directors to form a subcommittee, signaling their commitment to stakeholders to improve ESG performance. Second, the CSR committee fosters ESG consciousness not only at the top management level

but also among lower-level employees through incentivizing ESG-friendly practices and providing training on avoiding environmental or social misconduct. By instituting a CSR committee at the board level, firms can instill sustainability throughout the organization, meeting stakeholder expectations. Third, since establishing a CSR committee is voluntary, its presence can significantly enhance environmental and social initiatives, and its positive signaling effect can help differentiate firms from competitors and gain a competitive advantage. However, our findings also caution firms to carefully assess the role of their CSR committee

concerning slack resources. The pure establishment of a CSR committee is not conducive to translating slack into ESG outcomes, and its presence does not effectively mitigate the detriments of high slack for ESG. Therefore, we advise firms to consider the CSR committee's composition and equip this subcommittee with sufficient authority. Factors such as the number of independent directors, frequency of meetings, and the directors' gender or expertise can influence the outcomes of CSR committees (Eberhardt-Toth, 2017; Elmaghrabi, 2021). Since the composition of board committees remains an under researched topic (Alhossini et al., 2021; Rossi & Tarquinio, 2017), more research is needed to study CSR committee composition in conjunction with slack resources and ESG to provide managers with more guidance for deciding who should be on the CSR committee.

3.7.4 Limitations and Future Research

We note that our findings should be interpreted with some limitations in mind, which can serve as departure points for future research. First, we focused on publicly listed and large firms from a highly developed economy owing to data availability and comparability considerations. Future research could build on the study design to conduct research in less developed economies or small- and medium-sized enterprises. Changing the research setting could provide more insights into the relationships between slack resources, CSR committees, and ESG performance due to different institutional frameworks or decision-making processes that could influence these relationships.

Second, while our measure of slack is well established in management literature, future research could utilize emerging technologies, such as generative artificial intelligence, to benchmark specific slack measures against qualitative insights from firms' annual reports. For instance, leveraging tools like ChatGPT-4o could enable sentiment analysis by developing relevant keywords and analyzing financial reports (Cao & Zhai, 2023). Additionally, we focused on financial slack resources, although other types of slack (e.g., human resource slack) or other intangible resources could influence the level of ESG investment.

Third, we have not explored the dynamics between the two slack types (absorbed vs. unabsorbed), nor can we derive an optimal configuration of slack resources in the face of increasing ESG demands. Future research is needed to examine how the underlying slack types interact in affecting ESG outcomes and if there is an optimal configuration of absorbed and unabsorbed slack resources.

Fourth, our study design using secondary data did not allow us to illuminate the firm internal processes that led to the deployment of slack resources. Thus, future research is needed to

explore whether and how, for example, different perceptions of managers (e.g., opportunity or threat) could lead to different slack deployment decisions for ESG.

Fifth, we treated the CSR committee as a binary variable. While this approach is standard practice in related studies (e.g., Fuente et al., 2017; Wasiuzzaman et al., 2022), future research is needed to explore the composition of the CSR committee. For example, the management capabilities of the CSR committee members could play an integral role in influencing the deployment of slack resources, as previous research has shown that managers' dynamic capabilities are related to sustainability outcomes (Heubeck, 2023). Our study aimed to understand the impact of ESG investments on firm performance across various industries rather than conducting detailed analyses of committee compositions. Although factors such as gender composition are considered important, they fall outside our primary scope and are suggested for future research.

Sixth, another limitation is that we only used data from one ESG data provider. Using other ESG rankings might have produced different results due to the lack of a standardized rating system. This variability in ratings from different ESG agencies can significantly impact the perceived performance and efficiency of ESG investments (Berg et al., 2022). Consequently, firms may find it challenging to achieve consistent performance improvements through ESG practices due to these rating discrepancies, highlighting the ambiguous role of ESG. This limitation opens up a potential avenue for future research to explore how different ESG performance metrics affect firm performance. As some studies indicate that investing resources in ESG initiatives is inefficient (Makridis & Simaan, 2024; Mithani, 2017), assessing whether firms should allocate slack resources to ESG initiatives or other areas for better efficiency could be helpful.

Last, our study did not test for industry differences, but we controlled for them in our analysis. We focus on deriving general implications applicable across various industries; therefore, we did not conduct cross-industry comparisons. Nevertheless, further studies could close that gap and delve deeper into industry differences, especially exploring how the investment of slack resources in ESG initiatives takes effect in specific sectors such as manufacturing.

3.7.5 Conclusion and Contributions to Business Ethics

Although research on ESG and its impact on performance measures is extensive, there exists a gap in studies examining the antecedents of slack resources for firms' ESG performance and the governance mechanisms shaping this relationship. This study offers an in-depth analysis of

the dynamics of slack resources and ESG performance and highlights the importance of further research on the potential influence of governance mechanisms.

We have demonstrated that slack resources play a crucial role in ESG performance, revealing a nuanced and contingent relationship. Our findings indicate an inverted U-shaped effect, with low slack levels positively impacting ESG, peaking at an optimal point, and declining after that. This effect is mainly driven by unabsorbed slack resources, notably affecting the environmental and social dimensions of ESG. Despite the general benefits of CSR committees, our study suggests they are ineffective in leveraging slack resources for ESG initiatives or mitigating their detrimental effects. Our research offers a detailed exploration of how slack resources, CSR committees, and ESG performance interact, providing valuable insights into their complex dynamics.

This study holds significant implications for business ethics. By shedding light on the financial antecedents of ESG performance, we demonstrate that resource availability is a critical—yet dual-edged—determinant of ethical business operations. Further, while we reconfirm the ESG benefits of CSR committees, we reveal that these sustainability-oriented subcommittees may face challenges in directing the beneficial investment of slack resources toward ESG at low slack levels and that they cannot effectively mitigate the ESG detriments of slack resources at high levels. Thus, we urge firms to reconsider the role of the CSR committee to enable this subcommittee to realize its full potential and effectively contribute to developing strong business ethics and the global vision of a sustainable and egalitarian society. We call on top managers to purposefully allocate slack resources to address today's most pressing global challenges and broaden their decision-making horizons from self-interested motivations to promote business ethics and responsible investment of company resources.

Notes

[1]ESG covers a wider range of issues than CSR or corporate social performance (CSP) due to its three underlying pillars related to environmental (e.g., resource use, carbon emissions), social (e.g., employee rights, diversity), and governance (e.g., shareholder protection, board independence) considerations (Martiny et al., 2024). In conjunction with the measurability of ESG performance, we will use firms' ESG performance to measure the sustainability performance of firms related to these three pillars.

[2]We acknowledge that the choice of ESG data provider may have influenced our results. Variations in ESG scores across different providers could lead to differing outcomes (see Berg et al., 2022 for an investigation of the various ESG score providers). We chose LSEG Eikon because it is one of the most widely used databased in empirical research (e.g., Delgado-Ceballos et al., 2023; Just et al., 2023). LSEG Eikon is a leading data provider widely adopted by both practitioners and scholars due to its extensive coverage and rigorous methodologies, which establish it as a credible primary source for ESG data (Del Vitto et al., 2023).

[3]Excluding these outliers does not impact our primary results, as confirmed by subsequent unreported tests that included the two outliers.

3.8 References

Alhossini, M. A., Ntim, C. G., & Zalata, A. M. (2021). Corporate board committees and corporate outcomes: An international systematic literature review and agenda for future research. *The International Journal of Accounting*, *56*(01), 2150001. https://doi.org/10.1142/S1094406021500013

Alshorman, S., Qaderi, S., Alhmoud, T., & Meqbel, R. (2024). The role of slack resources in explaining the relationship between corporate social responsibility disclosure and firm market value: A case from an emerging market. *Journal of Sustainable Finance & Investment*, *14*(2), 307–326. https://doi.org/10.1080/20430795.2022.2119833

Angrist, J. D., & Krueger, A. B. (2001). Instrumental variables and the search for identification: From supply and demand to natural experiments. *The Journal of Economic Perspectives*, *15*(4), 69–85.

Argote, L., & Greve, H. R. (2007). A behavioral theory of the firm—40 years and counting: Introduction and impact. *Organization Science*, *18*(3), 337–349. https://doi.org/10.1287/orsc.1070.0280

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Barroso-Castro, C., Villegas-Periñan, M. del M., & Casillas-Bueno, J. C. (2016). How boards' internal and external social capital interact to affect firm performance. *Strategic Organization*, *14*(1), 6–31. https://doi.org/10.1177/1476127015604799

Bentley, F. S., & Kehoe, R. R. (2020). Give them some slack—They're trying to change! The benefits of excess cash, excess employees, and increased human capital in the strategic change context. *Academy of Management Journal*, *63*(1), 181–204. https://doi.org/10.5465/amj.2018.0272

Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, *26*(6), 1315–1344. https://doi.org/10.1093/rof/rfac033

Berrone, P., & Gomez-Mejia, L. R. (2009). Environmental performance and executive compensation: An integrated agency-institutional perspective. *Academy of Management Journal*, *52*(1), 103–126. https://doi.org/10.5465/amj.2009.36461950

Birindelli, G., Dell'Atti, S., Iannuzzi, A. P., & Savioli, M. (2018). Composition and activity of the board of directors: Impact on ESG performance in the banking system. *Sustainability*, *10*(12), 4699. https://doi.org/10.3390/su10124699

Biswas, P. K., Mansi, M., & Pandey, R. (2018). Board composition, sustainability committee and corporate social and environmental performance in Australia. *Pacific Accounting Review*, *30*(4), 517–540. https://doi.org/10.1108/PAR-12-2017-0107

Bourgeois, L. J. (1981). On the measurement of organizational slack. *Academy of Management Review*, *6*(1), 29–39. https://doi.org/10.5465/AMR.1981.4287985

Bravo, F., & Reguera-Alvarado, N. (2017). The effect of board of directors on R&D intensity: board tenure and multiple directorships. *R&D Management*, *47*(5), 701–714. https://doi.org/10.1111/radm.12260

Breusch, T. S., & Pagan, A. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *Review of Economic Studies*, *47*(1), 239–253. https://doi.org/10.2307/2297111

Brown, S. J., Goetzmann, W., Ibbotson, R. G., & Ross, S. A. (1992). Survivorship bias in performance studies. *Review of Financial Studies*, *5*(4), 553–580. https://doi.org/10.1093/rfs/5.4.553

Burke, J. J., Hoitash, R., & Hoitash, U. (2019). The heterogeneity of board-level sustainability committees and corporate social performance. *Journal of Business Ethics*, *154*(4), 1161–1186.

Cao, Y., & Zhai, J. (2023). Bridging the gap – The impact of ChatGPT on financial research. *Journal of Chinese Economic and Business Studies*, *21*(2), 177–191. https://doi.org/10.1080/14765284.2023.2212434

Chams, N., & García-Blandón, J. (2019). *Sustainable or not sustainable?* The role of the board of directors. *Journal of Cleaner Production*, *226*, 1067–1081. https://doi.org/10.1016/j.jclepro.2019.04.118

Chen, Z., & Xie, G. (2022). ESG disclosure and financial performance: Moderating role of ESG investors. *International Review of Financial Analysis*, *83*, 102291. https://doi.org/10.1016/j.irfa.2022.102291

Chiu, Y., & Liaw, Y. (2009). Organizational slack: Is more or less better? *Journal of Organizational Change Management*, *22*(3), 321–342. https://doi.org/10.1108/09534810910951104

Coad, A., Segarra, A., & Teruel, M. (2016). Innovation and firm growth: Does firm age play a role? *Research Policy*, *45*(2), 387–400. https://doi.org/10.1016/j.respol.2015.10.015

Cordeiro, J., Veliyath, R., & Eramus, E. (2000). An empirical investigation of the determinants of outside director compensation. *Corporate Governance: An International Review*, *8*(3), 268–279. https://doi.org/10.1111/1467-8683.00204

Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm* (1st ed.). Englewood Cliffs, NJ: Prentice-Hall.

D'Amato, A., & Falivena, C. (2020). Corporate social responsibility and firm value: Do firm size and age matter? Empirical evidence from European listed companies. *Corporate Social Responsibility and Environmental Management*, *27*(2), 909–924. https://doi.org/10.1002/csr.1855

Del Vitto, A., Marazzina, D., & Stocco, D. (2023). ESG ratings explainability through machine learning techniques. *Annals of Operations Research*, 1–30. https://doi.org/10.1007/s10479-023-05514-z

Delgado-Ceballos, J., Ortiz-De-Mandojana, N., Antolín-López, R., & Montiel, I. (2023). Connecting the sustainable development goals to firm-level sustainability and ESG factors: The need for double materiality. *Business Research Quarterly*, *26*(1), 2–10. https://doi.org/10.1177/23409444221140919

Derchi, G.-B., Zoni, L., & Dossi, A. (2021). Corporate social responsibility performance, incentives, and learning effects. *Journal of Business Ethics*, *173*(3), 617–641. https://doi.org/10.1007/s10551-020-04556-8

Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, *35*(12), 1504–1511. https://doi.org/10.1287/mnsc.35.12.1504

Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of Multilatinas: Moderating effects of geographic International diversification and financial slack. *Journal of Business Ethics*, *168*(2), 315–334. https://doi.org/10.1007/s10551-019-04177-w

Eberhardt-Toth, E. (2017). Who should be on a board corporate social responsibility committee? *Journal of Cleaner Production*, *140*, 1926–1935. https://doi.org/10.1016/j.jclepro.2016.08.127

Elbardan, H., Uyar, A., Kuzey, C., & Karaman, A. S. (2023). CSR reporting, assurance, and firm value and risk: The moderating effects of CSR committees and executive compensation. *Journal of International Accounting, Auditing and Taxation*, *53*, 100579. https://doi.org/10.1016/j.intaccaudtax.2023.100579

Elmaghrabi, M. E. (2021). CSR committee attributes and CSR performance: UK evidence. *Corporate Governance: The International Journal of Business in Society*, *21*(5), 892–919. https://doi.org/10.1108/CG-01-2020-0036

Endrikat, J., de Villiers, C., Guenther, T. W., & Guenther, E. M. (2021). Board characteristics and corporate social responsibility: A meta-analytic investigation. *Business & Society*, *60*(8), 2099–2135. https://doi.org/10.1177/0007650320930638

Fatima, T., & Elbanna, S. (2023). Corporate social responsibility (CSR) implementation: A review and a research agenda towards an integrative framework. *Journal of Business Ethics*, *183*(1), 105–121. https://doi.org/10.1007/s10551-022-05047-8

Fu, R., Tang, Y., & Chen, G. (2020). Chief sustainability officers and corporate social (ir)responsibility. *Strategic Management Journal*, *41*(4), 656–680. https://doi.org/10.1002/smj.3113

Fuente, J. A., García-Sánchez, I. M., & Lozano, M. B. (2017). The role of the board of directors in the adoption of GRI guidelines for the disclosure of CSR information. *Journal of Cleaner Production*, *141*, 737–750. https://doi.org/10.1016/j.jclepro.2016.09.155

García-Sánchez, I. M., Gómez-Miranda, M. E., David, F., & Rodríguez-Ariza, L. (2019). Board independence and GRI-IFC performance standards: The mediating effect of the CSR committee. *Journal of Cleaner Production*, *225*, 554–562. https://doi.org/10.1016/j.jclepro.2019.03.337

George, G. (2005). Slack resources and the performance of privately held firms. *Academy of Management Journal*, *48*(4), 661–676. https://doi.org/10.5465/amj.2005.17843944

Gill, A. (2008). Corporate governance as social responsibility: A research agenda. *Berkeley Journal of International Law*, *26*, 452.

Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR research in corporate finance. *Journal of Corporate Finance*, *66*, 101889. https://doi.org/10.1016/j.jcorpfin.2021.101889

Greene, W. H. (2019). *Econometric analysis* (8th ed.). Harlow: Pearson.

Haans, R. F. J., Pieters, C., & He, Z.-L. (2016). Thinking about U: Theorizing and testing U- and inverted U-shaped relationships in strategy research. *Strategic Management Journal*, *37*(7), 1177–1195. https://doi.org/10.1002/smj.2399

Harrison, J. S., & Coombs, J. E. (2012). The moderating effects from corporate governance characteristics on the relationship between available slack and community-based firm performance. *Journal of Business Ethics*, *107*(4), 409–422. https://doi.org/10.1007/s10551-011-1046-z

He, X., & Jiang, S. (2019). Does gender diversity matter for green innovation? *Business Strategy and the Environment*, *28*(7), 1341–1356. https://doi.org/10.1002/bse.2319

Heubeck, T. (2023). Looking back to look forward: A systematic review of and research agenda for dynamic managerial capabilities. *Management Review Quarterly*. https://doi.org/10.1007/s11301-023-00359-z

Heubeck, T. (2024). Walking on the gender tightrope: Unlocking ESG potential through CEOs' dynamic capabilities and strategic board composition. *Business Strategy and the Environment*, *33*(3), 2020–2039. https://doi.org/10.1002/bse.3578

Heubeck, T., & Meckl, R. (2024). Does board composition matter for innovation? A longitudinal study of the organizational slack–innovation relationship in Nasdaq-100 companies. *Journal of Management and Governance*, *28*(2), 597–624. https://doi.org/10.1007/s10997-023-09687-4

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review*, *28*(3), 383–396. https://doi.org/10.5465/amr.2003.10196729

Hong, H., Kubik, J. D., & Scheinkman, J. A. (2012, October). Financial constraints on corporate goodness. Working Paper, National Bureau of Economic Research. https://doi.org/10.3386/w18476

Huang, D. Z. X. (2021). Environmental, social and governance (ESG) activity and firm performance: a review and consolidation. *Accounting & Finance*, *61*(1), 335–360. https://doi.org/10.1111/acfi.12569

Hussain, N., Rigoni, U., & Orij, R. P. (2018). Corporate governance and sustainability performance: Analysis of triple bottom line performance. *Journal of Business Ethics*, *149*(2), 411–432. https://doi.org/10.1007/s10551-016-3099-5

Islam, S. M. T., Ghosh, R., & Khatun, A. (2021). Slack resources, free cash flow and corporate social responsibility expenditure: evidence from an emerging economy. *Journal of Accounting in Emerging Economies*, *11*(4), 533–551. https://doi.org/10.1108/JAEE-09-2020-0248

Jamali, D., Safieddine, A., & Rabbath, M. (2008). Corporate governance and corporate social responsibility synergies and interrelationships. *Corporate Governance: An International Review*, *16*, 443–459. https://doi.org/10.1111/j.1467-8683.2008.00702.x

Jebe, R. (2019). The convergence of financial and ESG materiality: Taking sustainability mainstream. *American Business Law Journal*, *56*(3), 645–702. https://doi.org/10.1111/ablj.12148

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, *76*(2), 323–329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1016/0304-405X(76)90026-X

Johnston, R., Jones, K., & Manley, D. (2018). Confounding and collinearity in regression analysis: a cautionary tale and an alternative procedure, illustrated by studies of British voting behaviour. *Quality & Quantity*, *52*(4), 1957–1976. https://doi.org/10.1007/s11135-017-0584-6

Just, R., Sommer, F., Heubeck, T., & Meckl, R. (2023). Sustainability as a stumbling block in closing acquisitions? The joint effect of target and acquirer ESG performance on time to completion. *Finance Research Letters*, *58*, 104422. https://doi.org/10.1016/j.frl.2023.104422

Kang, C., Germann, F., & Grewal, R. (2016). Washing away your sins? Corporate social responsibility, corporate social irresponsibility, and firm performance. *Journal of Marketing*, *80*(2), 59–79. https://doi.org/10.1509/jm.15.0324

Kennedy, P. (2008). *A guide to econometrics* (6th ed.). Malden, MA: Wiley-Blackwell.

Koh, P.-S., & Reeb, D. M. (2015). Missing R&D. *Journal of Accounting and Economics*, *60*(1), 73–94. https://doi.org/10.1016/j.jacceco.2015.03.004

Lee, C.-L., & Wu, H.-C. (2016). How do slack resources affect the relationship between R&D expenditures and firm performance? *R&D Management*, *46*(S3), 958–978. https://doi.org/10.1111/radm.12141

Leibenstein, H. (1969). Organizational or frictional equilibria, X-efficiency, and the rate of innovation. *Quarterly Journal of Economics*, *83*(4), 600–623.

Leyva-de la Hiz, D. I., Ferron-Vilchez, V., & Aragon-Correa, J. A. (2019). Do firms' slack resources influence the relationship between focused environmental innovations and financial performance? More is not always better. *Journal of Business Ethics*, *159*(4), 1215–1227. https://doi.org/10.1007/s10551-017-3772-3

Liao, L., Luo, L., & Tang, Q. (2015). Gender diversity, board independence, environmental committee and greenhouse gas disclosure. *The British Accounting Review*, *47*(4), 409–424. https://doi.org/10.1016/j.bar.2014.01.002

Lin, W. L., Ho, J. A., Ng, S. I., & Lee, C. (2019). Does corporate social responsibility lead to improved firm performance? The hidden role of financial slack. *Social Responsibility Journal*, *16*(7), 957–982. https://doi.org/10.1108/SRJ-10-2018-0259

Lind, J. T., & Mehlum, H. (2010). With or without U? The appropriate test for a U-Shaped relationship. *Oxford Bulletin of Economics and Statistics*, *72*(1), 109–118. https://doi.org/10.1111/j.1468-0084.2009.00569.x

LSEG. (2023). *Environmental, social and governance scores from LSEG* (pp. 1–33). https://www.lseg.com/content/dam/data-analytics/en_us/documents/methodology/lseg-esg-scores-methodology.pdf?esg=Colgate-Palmolive+Co. Accessed 23 April 2024

Lu, H., Liu, X., & Osiyevskyy, O. (2023). Doing safe while doing good: Slack, risk management capabilities, and the reliability of value creation through CSR. *Strategic Organization*, *21*(4), 874–904. https://doi.org/10.1177/14761270221122428

Makridis, C., & Simaan, M. (2024). Balancing returns and responsibility: Evidence from shrinkage-based portfolios. SSRN Scholarly Paper, Rochester, NY. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4597152. Accessed 3 June 2024

Marlin, D., & Geiger, S. W. (2015). A reexamination of the organizational slack and innovation relationship. *Journal of Business Research*, *68*(12), 2683–2690. https://doi.org/10.1016/j.jbusres.2015.03.047

Martiny, A., Testa, F., Taglialatela, J., & Iraldo, F. (2024). Determinants of environmental social and governance (ESG) performance: A systematic literature review. *Journal of Cleaner Production*, 142213. https://doi.org/10.1016/j.jclepro.2024.142213

Masulis, R. W., & Reza, S. W. (2015). Agency problems of corporate philanthropy. *The Review of Financial Studies*, *28*(2), 592–636. https://doi.org/10.1093/rfs/hhu082

Mattingly, J. E., & Olsen, L. (2018). Performance outcomes of investing slack resources in corporate social responsibility. *Journal of Leadership & Organizational Studies*, *25*(4), 481–498. https://doi.org/10.1177/1548051818762336

McGuire, J. B., Sundgren, A., & Schneeweis, T. (1988). Corporate social responsibility and firm financial performance. *Academy of Management Journal*, *31*(4), 854–872. https://doi.org/10.5465/256342

Michelon, G., & Parbonetti, A. (2012). The effect of corporate governance on sustainability disclosure. *Journal of Management & Governance*, *16*(3), 477–509. https://doi.org/10.1007/s10997-010-9160-3

Mishina, Y., Pollock, T. G., & Porac, J. F. (2004). Are more resources always better for growth? Resource stickiness in market and product expansion. *Strategic Management Journal*, *25*(12), 1179–1197. https://doi.org/10.1002/smj.424

Mithani, M. A. (2017). Innovation and CSR — Do they go well together? *Long Range Planning*, *50*(6), 699–711. https://doi.org/10.1016/j.lrp.2016.08.002

Mount, M. P., Ertug, G., Kavusan, K., George, G., & Zou, T. (2024). Reeling in the slack: An integrative review to reinstate slack as a central theoretical construct for management research. *Academy of Management Annals*, *forthcoming*. https://doi.org/10.5465/annals.2023.0087

Nohria, N., & Gulati, R. (1996). Is slack good or bad for innovation? *Academy of Management Journal*, *39*(5), 1245–1264. https://doi.org/10.2307/256998

Penrose, E. T. (1959). *The theory of the growth of the firm*. New York: Oxford University Press.

Petrenko, O. V., Aime, F., Ridge, J., & Hill, A. (2016). Corporate social responsibility or CEO narcissism? CSR motivations and organizational performance. *Strategic Management Journal*, *37*(2), 262–279. https://doi.org/10.1002/smj.2348

Radu, C., & Francoeur, C. (2017). Does innovation drive environmental disclosure? A new insight into sustainable development. *Business Strategy and the Environment*, *26*(7), 893–911. https://doi.org/10.1002/bse.1950

Radu, C., & Smaili, N. (2022). Alignment versus monitoring: An examination of the effect of the CSR committee and CSR-linked executive compensation on CSR performance. *Journal of Business Ethics*, *180*(1), 145–163. https://doi.org/10.1007/s10551-021-04904-2

Rodrigue, M., Magnan, M., & Cho, C. H. (2013). Is environmental governance substantive or symbolic? An empirical investigation. *Journal of Business Ethics*, *114*(1), 107–129.

Rossi, A., & Tarquinio, L. (2017). An analysis of sustainability report assurance statements: Evidence from Italian listed companies. *Managerial Auditing Journal*, *32*(6), 578–602. https://doi.org/10.1108/MAJ-07-2016-1408

Rupley, K. H., Brown, D., & Marshall, R. S. (2012). Governance, media and the quality of environmental disclosure. *Journal of Accounting and Public Policy*, *31*(6), 610–640. https://doi.org/10.1016/j.jaccpubpol.2012.09.002

Ryan, H. E., & Wiggins, R. A. (2004). Who is in whose pocket? Director compensation, board independence, and barriers to effective monitoring. *Journal of Financial Economics*, *73*(3), 497–524. https://doi.org/10.1016/j.jfineco.2003.11.002

Sasabuchi, S. (1980). A test of a multivariate normal mean with composite hypotheses determined by linear inequalities. *Biometrika*, *67*(2), 429–439. https://doi.org/10.1093/biomet/67.2.429

Semadeni, M., Chin, M. K., & Krause, R. (2022). Pumping the brakes: Examining the impact of CEO political ideology divergence on firm responses. *Academy of Management Journal*, *65*(2), 516–544. https://doi.org/10.5465/amj.2019.1131

Shahzad, A. M., Mousa, F. T., & Sharfman, M. P. (2016). The implications of slack heterogeneity for the slack-resources and corporate social performance relationship. *Journal of Business Research*, *69*(12), 5964–5971. https://doi.org/10.1016/j.jbusres.2016.05.010

Shang, L., Zhou, Y., Hu, X., & Zhang, Z. (2023). How does the absorbed slack impact corporate social responsibility? Exploring the nonlinear effect and condition in China. *Asian Business & Management*, *22*(3), 857–877. https://doi.org/10.1057/s41291-022-00176-4

Sharfman, M. P., Wolf, G., Chase, R. B., & Tansik, D. A. (1988). Antecedents of organizational slack. *Academy of Management Review*, *13*(4), 601–614. https://doi.org/10.5465/AMR.1988.4307484

Shields, R., Ajour El Zein, S., & Vila Brunet, N. (2021). An analysis on the NASDAQ's potential for sustainable investment practices during the financial shock from COVID-19. *Sustainability*, *13*(7), 3748. https://doi.org/10.3390/su13073748

Spiller, R. (2000). Ethical business and investment: A model for business and society. *Journal of Business Ethics*, *27*(1), 149–160. https://doi.org/10.1023/A:1006445915026

Spitzeck, H. (2009). The development of governance structures for corporate responsibility. *Corporate Governance: The international journal of business in society*, *9*(4), 495–505. https://doi.org/10.1108/14720700910985034

Tabesh, P., Vera, D., & Keller, R. T. (2019). Unabsorbed slack resource deployment and exploratory and exploitative innovation: How much does CEO expertise matter? *Journal of Business Research*, *94*, 65–80. https://doi.org/10.1016/j.jbusres.2018.08.023

Tan, J., & Peng, M. W. (2003). Organizational slack and firm performance during economic transitions: Two studies from an emerging economy. *Strategic Management Journal*, *24*(13), 1249–1263. https://doi.org/10.1002/smj.351

Uyar, A., Lodh, S., Nandy, M., Kuzey, C., & Karaman, A. S. (2023). Tradeoff between corporate investment and CSR: The moderating effect of financial slack, workforce slack, and board gender diversity. *International Review of Financial Analysis*, *87*, 102649. https://doi.org/10.1016/j.irfa.2023.102649

Velte, P., & Stawinoga, M. (2020). Do chief sustainability officers and CSR committees influence CSR-related outcomes? A structured literature review based on empirical-quantitative research findings. *Journal of Management Control*, *31*(4), 333–377. https://doi.org/10.1007/s00187-020-00308-x

Wang, Y., Guo, B., & Yin, Y. (2017). Open innovation search in manufacturing firms: The role of organizational slack and absorptive capacity. *Journal of Knowledge Management*, *21*(3), 656–674. https://doi.org/10.1108/JKM-09-2016-0368

Wasiuzzaman, S., Uyar, A., Kuzey, C., & Karaman, A. S. (2022). Corporate social responsibility: Is it a matter of slack financial resources or strategy or both? *Managerial and Decision Economics*, *43*(6), 2444–2466. https://doi.org/10.1002/mde.3537

Wiseman, R. M., & Bromiley, P. (1996). Toward a model of risk in declining organizations: An empirical examination of risk, performance, and decline. *Organization Science*, *7*(5), 524–543. https://doi.org/10.1287/orsc.7.5.524

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. MIT Press.

Xu, E., Yang, H., Quan, J., & Lu, Y. (2014). Organizational slack and corporate social performance: Empirical evidence from China's public firms. *Asia Pacific Journal of Management*, *32*. https://doi.org/10.1007/s10490-014-9401-0

Xu, J., Liu, F., & Shang, Y. (2021). R&D investment, ESG performance and green innovation performance: Evidence from China. *Kybernetes*, *50*, 737–756. https://doi.org/10.1108/K-12-2019-0793

Yuan, X., Li, Z., Xu, J., & Shang, L. (2022). ESG disclosure and corporate financial irregularities – Evidence from Chinese listed firms. *Journal of Cleaner Production*, *332*, 129992. https://doi.org/10.1016/j.jclepro.2021.129992

Zhao, X., Su, J., Roh, T., Lee, J. Y., & Zhan, X. (2024). Technological diversification and innovation performance: The moderating effects of organizational slack and ownership in Chinese listed firms. *Cross Cultural & Strategic Management*, *31*(2), 356–378. https://doi.org/10.1108/CCSM-01-2023-0011

Chapter 4 Research Paper 2: CEO's political ideology and ESG

Heubeck, T., & Ahrens, A. (2025). Sustainable by ideology? The influence of CEO political ideology and Ivy League education on ESG (Environmental, Social, and Governance) performance. Business Strategy and the Environment, 34(4), 4785-4810. https://doi.org/10.1002/bse.4212

Abstract

Building on upper echelons theory, this study posits that political ideology serves as a foundational factor influencing whether CEOs prioritize environmental, social, and governance (ESG) outcomes, whereas Ivy League education acts as a contextual factor that moderates this relationship. Analyzing data from S&P 900 manufacturing firms, the findings reveal that liberal CEOs enhance ESG performance—particularly in the social and governance pillars—in contrast to their conservative counterparts. CEO political ideology's effect on ESG performance does not depend on whether CEOs graduated from an Ivy League institution. Instead, Ivy League–educated CEOs directly deter ESG performance, possibly due to specific values, perspectives, and social connections shaped by their elite educational background. This study contributes to upper echelons theory by illuminating two critical microlevel factors CEO political ideology and elite education—that shape firms' ESG strategy, offering valuable implications for boards and stakeholders when selecting and evaluating corporate leadership.

Keywords: CEO, elite education, ESG, Ivy League, political ideology, upper echelons theory

4.1 Introduction

Organizations and their strategic leadership face increasing pressure to balance shareholder interests with those of their stakeholders (Fatima and Elbanna 2023; Reimer et al. 2018). The Principles for Responsible Investment (PRI), initiated by the United Nations, promote a global shift toward more sustainable and responsible business practices, which significantly raised awareness among corporations to prioritize environmental, social, and governance (ESG) initiatives (Peng and Chen 2024). Heightened societal awareness and the benefits of ESG—including superior financial performance (Friede et al. 2015; Velte 2017), enhanced operational efficiency (Kao 2023), stronger governance (Peng and Chen 2024), and reduced managerial misconduct (He et al. 2022; Yuan et al. 2022)—have led to the integration of ESG into corporate strategy (Sandberg et al. 2023; Taglialatela et al. 2023).

With the growing emphasis on a stakeholder-centric view of the firm (Carroll 1991; Freeman 1984), research has begun to identify the factors driving firms' ESG strategies (Seow 2025; Wernicke et al. 2022). However, this literature stream primarily focuses on macrolevel factors facilitating ESG (Gillan et al. 2021), such as institutional (e.g., C. Liu et al. 2023; Wang et al. 2023) and organizational factors (e.g., Drempetic et al. 2020; Heubeck and Ahrens 2024). Recent studies, however, have shifted attention to microlevel drivers, particularly the role of a firm's chief executive officer (CEO) (Seow 2025; Wernicke et al. 2022). These studies emphasize CEO characteristics and experiences, including reputational concerns (Cabreros et al. 2024), formative early experiences like childhood poverty (Liu et al. 2024b), dynamic capabilities (Heubeck 2024b), or foreign experience (Liu et al. 2024a), as key determinants influencing firms' ESG performance.

Building on upper echelons theory (Hambrick and Mason 1984), we propose that CEOs' political ideology represents a significant antecedent of firms' ESG performance because it instills distinct value systems that influence ESG-related decisions. According to upper echelons theory, the background characteristics of top executives shape their strategic decisions by infusing them with values, personalities, and experiences (Hambrick 2007; Hambrick and Mason 1984). Given the significant sway of CEOs over organizational decision-making (Quigley and Hambrick 2015), their firm's strategy often reflects their preferences and values, particularly in complex and ambiguous contexts where personal predispositions play a critical role (Cannella and Holcomb 2005; Hambrick 2007). Although upper echelons research highlights the impact of CEOs' characteristics on organizational outcomes, it has been criticized for over-relying on visible traits like age or gender as proxies for psychological factors (Finkelstein et al. 2009; Neely et al. 2020). Recent studies address this limitation by examining

less-observable characteristics, such as political ideology, as key predictors of CEO decisions and organizational outcomes (Jeong et al. 2021; Semadeni et al. 2022; Swigart et al. 2020).

Among these characteristics, political ideology is a particularly powerful predictor in shaping a CEO's identity, values, and behaviors (Chandler et al. 2023; Swigart et al. 2020). Research in political psychology demonstrates that political ideology profoundly impacts personal worldviews, affecting decision-making preferences (Jost et al. 2008, 2009). Liberal CEOs, whose political value systems emphasize communal values like human rights, environmental protection, and egalitarianism, are more likely to pursue ESG strategies (Jost and Amodio 2012; Y. Kim 2024b). Conversely, conservative CEOs, with a preference for maintaining the status quo and prioritizing shareholder capitalism, are less likely to implement ESG initiatives (Jost et al. 2003; Weng and Yang 2024; Wolman et al. 2024). This theoretical presumption is also supported by anecdotal evidence, which attests to the effect of political ideology on ESG (e.g., Segal 2023; Sorkin et al. 2022).

This study contributes to this growing body of research by exploring the distinctions between corporate social responsibility (CSR) and ESG frameworks. Although CSR emphasizes voluntary ethical practices and social initiatives, ESG provides measurable criteria across environmental, social, and governance dimensions, offering a more comprehensive evaluation of corporate sustainability and responsibility (Liu et al. 2024b; Martiny et al. 2024). Thus, ESG expands the traditional CSR construct by adding environmental and governance dimensions, which are crucial for understanding the impact of CEO political ideology on corporate strategy (Gillan et al. 2021; Huang 2021). Although there is evidence that CEOs with liberal political ideologies encourage CSR (e.g., Chin et al. 2013; Jeong et al. 2021), the role of CEO political ideology in connection to ESG remains underexplored.[1]

We extend upper echelons theory, particularly research on CEO political liberalism, by introducing CEO Ivy League education as a boundary condition moderating the relationship between political ideology and ESG outcomes (Miller et al. 2015; Urquhart and Zhang 2022). Ivy League education represents an elite educational experience that significantly enhances graduates' human and social capital (Miller et al. 2015) and shapes their decision-making processes through ideological value systems (Mullen 2009). This educational background, linked to enhanced human capital and strategic aptitude (Bailey and Helfat 2003; Heubeck 2024a; Wally and Baum 1994), is particularly relevant in the complex context of ESG strategy (Heubeck 2024b).

Although many US CEOs are Ivy League–educated (Moody 2021; Whitler 2019), this characteristic remains understudied in the context of ESG. Ivy League education could lead

liberal CEOs to emphasize ESG further while potentially deterring conservative CEOs from prioritizing it. Therefore, our second research goal explores the moderating influence of elite education attained at Ivy League institutions on the relationship between CEO political ideology and ESG outcomes.

We test our hypotheses using longitudinal data from a sample of US S&P 900 manufacturing firms. The US provides a compelling context for studying ESG strategy because—unlike regions with mandatory ESG disclosures, such as the UK, EU, or China (Busch 2023; Peng and Chen 2024)—its voluntary reporting environment allows us to examine the discretionary practices of firms.

By revealing that CEO political ideology significantly impacts ESG performance—with a positive effect for liberal CEOs and an adverse effect for conservative CEOs—we contribute to upper echelons theory by bridging it with political psychology. Our findings demonstrate that behavioral consistency applies to political ideology in the realm of upper echelons theory, extending prior research by showing that CEOs' political ideologies not only influence CSR (e.g., Chin et al. 2013; Gupta et al. 2021) but also shape ESG-related decisions. This insight enriches the political psychology literature within the upper echelons framework, a critical contribution given the increasing political polarization surrounding ESG (Armstrong 2023). Additionally, we provide nuance to upper echelons theory by revealing that CEO political ideology distinctly affects social and governance strategies but not environmental strategy. Thus, we illuminate ideologically driven variations across specific ESG pillars, which differ significantly in scope (Deng et al. 2024; LSEG 2023; Trahan and Jantz 2023).

Further, we advance the understanding of upper echelons theory by demonstrating that Ivy League education functions not as a boundary condition but as a background characteristic that directly influences CEOs' decisions in relation to ESG strategy. Specifically, we find that Ivy League–educated CEOs deter ESG outcomes, potentially due to prioritizing traditional business goals over ESG concerns. These findings underscore two distinct effect channels: the ideological channel, reflecting how political ideology affects ESG strategy, and the elite education channel, capturing how Ivy League education shapes CEO priorities regarding ESG strategy. Importantly, neither political ideology nor Ivy League education uniformly affect ESG outcomes across all pillars. These results, robust to endogeneity concerns, alternate measures, and sample definitions, provide critical theoretical and empirical insights into the nuanced mechanisms driving ESG strategy within the upper echelons framework.

We begin by introducing the main theoretical framework that underpins this study, based on which we derive the two research hypotheses. Next, we outline our research methodology,

detailing data collection and variable measurement procedures. Following this, we present the main regression results and conduct several additional tests to demonstrate the robustness of our findings. Finally, we discuss our results' theoretical and practical implications and outline future research directions.

4.2 Theoretical Background and Hypothesis Development

4.2.1 CEO Political Ideology and ESG Performance

Upper echelons theory underscores the critical role of CEOs— as the primary architects of a firm's strategy and operations— in shaping corporate outcomes, emphasizing the profound influence of their psychological characteristics on decision-making (Finkelstein et al. 2009; Hambrick 2007; Hambrick and Mason 1984). Among these characteristics, political ideology has emerged as a powerful predictor of CEOs' decision-making preferences within the upper echelons literature (Chandler et al. 2023; Kashmiri and Mahajan 2017). Building on this conceptual framework, we propose that CEOs' background characteristics—specifically, political ideology—significantly influence a crucial and timely organizational outcome—specifically, ESG performance—due to CEOs' substantial power over organizational decision-making.

Political ideology is a key determinant of psychological differences and a predictor of the values and beliefs that shape CEOs' decision-making (Swigart et al. 2020) and encompasses a set of firmly rooted beliefs about how society should be organized and governed (Erikson and Tedin 2019; Jost et al. 2009). Despite the multidimensionality of political ideology, the liberal–conservative spectrum is commonly used to categorize political views and predict behaviors (Graham et al. 2009; Jost 2006). In this sense, political ideology is not a strict liberal–conservative dichotomy but a system of values and beliefs that are socially constructed, with the liberal–conservative divide serving as a suitable framework (Swigart et al. 2020).

The political psychology literature consistently demonstrates that ideological orientation shapes attitudes toward change and ambiguity (Swigart et al. 2020). Liberals are generally more receptive to change and tolerant of uncertainties, whereas conservatives are inclined to maintain the status quo, seeking stability and avoiding uncertainty (Conover and Feldman 1981; Giddens 2013; Jost et al. 2003). These psychological tendencies extend beyond the personal domain and continue to influence decision-making in the professional context, including corporate leadership (Cheng et al. 2024; Chin et al. 2013; Swigartet al. 2020).

Drawing on behavioral consistency theory, which suggests that individuals uphold stable core values across various contexts (Cain and McKeon 2016; Cronqvist et al. 2012), we argue that CEOs' political ideologies significantly shape not only their decision-making in the private context but also in the professional realm—especially concerning ESG strategy. Political beliefs are deeply ingrained and relatively stable over time (Bartels 2002; Jost et al. 2009). Therefore, CEOs' firmly anchored political beliefs may cause them to align their strategic choices with their political ideology (Gupta et al. 2021; Weng et al. 2023).

This ideological divide is particularly relevant in the context of ESG strategy, which requires CEOs to navigate complex issues involving environmental sustainability, social responsibility, and governance transparency (Heubeck 2024b; Mahran and Elamer 2024). High ESG scores can signal responsible business practices to stakeholders and lead to financial and nonfinancial benefits (MacNeil and Esser 2022; Sandberg et al. 2023).

We propose that ideological differences in openness, egalitarianism, and views on inequality further underscore how liberal and conservative CEOs approach ESG strategy. Conservative CEOs may perceive ESG as a threat to traditional business practices (Graham et al. 2009; Swigart et al. 2020), viewing it as an unnecessary or even harmful departure from their primary responsibility to shareholders. Liberal CEOs, conversely, due to their openness to change and egalitarian values (Jiang et al. 2018; Jost et al. 2003), are likely to see ESG as an opportunity to drive societal progress and embrace long-term sustainability.

Specifically, we propose that liberal CEOs are more inclined to embrace change, perceiving ESG strategy as a means to tackle global challenges like climate change and inequality. This openness contrasts with conservative CEOs, who tend to be less responsive to external pressures, such as social and environmental demands, focusing instead on maintaining internal business priorities. These preferences align with the openness– closedness framework in strategic leadership research (Gupta et al. 2021; Gupta and Briscoe 2020). Accordingly, liberal CEOs prefer an open-system decision-making process that actively considers external stakeholders—including the broader society— in their strategic decisions. In contrast, conservative CEOs tend to take a closed-system approach, isolating the firm from its external environment and prioritizing internal objectives and resource conservation (Chandler et al. 2023; Gupta and Briscoe 2020). This difference in decision-making style underscores the ideological divide between liberal and conservative CEOs (Chandler et al. 2023). Liberal CEOs, valuing external engagement, are more likely to collaborate with stakeholders, including regulatory bodies, nongovernmental organizations, and socially conscious consumers (Chandler et al. 2023; Gupta and Briscoe 2020), to promote ESG initiatives. This open-system

approach allows them to incorporate broader social and environmental issues into their strategic priorities (Gupta et al. 2021; Gupta and Briscoe 2020). In contrast, conservative CEOs focus on internal efficiency and profitability, viewing ESG demands primarily as external pressures that could compromise these goals (Chandler et al. 2023; Gupta and Briscoe 2020). As a result, they may resist adopting ESG practices, prioritizing the firm's internal interests and shielding the organization from external stakeholder demands.

Beyond openness to change, the second critical value that sets liberal CEOs apart is their more assertive advocacy for equality. Liberal CEOs tend to view ESG as aligned with their egalitarian principles, which are intrinsically focused on promoting fairness and reducing inequalities (Jost et al. 2003; Jost and Amodio 2012). Thus, liberal CEOs perceive ESG as a mechanism for driving social change and recognize their agency in addressing grand societal challenges by promoting, for example, fair labor practices or community engagement (Gupta et al. 2021; Weng et al. 2023). This egalitarian orientation contrasts with conservative CEOs, who prioritize maintaining existing status hierarchies and view inequality as a natural outcome of meritocratic systems where individuals succeed based on their own efforts (Erikson and Tedin 2019; Jost et al. 2009). Therefore, conservative CEOs are less inclined to view ESG as a priority since they may see it as imposing external controls that disrupt the natural order of organizational and societal hierarchies.

In line with these ideological differences, liberal and conservative CEOs also differ in their understanding of the roots of inequality (Graham et al. 2009). Politically liberal CEOs recognize the situational and contextual factors—such as historical injustices, systemic biases, and unequal access to opportunities— that have contributed to societal disparities (Graham et al. 2009; Jost et al. 2003). They believe addressing these inequalities requires collective action, aligning with ESG principles that foster greater equality across environmental, social, and governance dimensions (Jost et al. 2003; Y. Kim 2024b; Swigart et al. 2020). In contrast, conservative CEOs emphasize individual agency, which implies that individuals can improve their status through personal effort—without the need for broader structural changes or external intervention (Graham et al. 2009; Jasinenko et al. 2020).

Differences in openness, egalitarianism, and perspectives on inequality influence how liberal and conservative CEOs approach ESG initiatives. Liberal CEOs, with their openness to change and focus on equality, see ESG strategy as a tool to address societal challenges like climate change. They favor collaboration with external stakeholders and integrate broader social concerns into corporate strategies. In contrast, conservative CEOs prioritize internal efficiency

and individual agency, often viewing ESG as an external pressure that disrupts business operations. Considering these ideological distinctions, we propose the following hypothesis:

Hypothesis 1. The political ideology of CEOs influences a firm's ESG performance. Specifically, liberal CEOs tend to enhance ESG performance, whereas conservative CEOs hinder it.

4.2.2 Moderating Role of Ivy League Education

Although the direct influence of CEO political ideology on ESG performance has been established, it is essential to consider how other factors might shape this relationship (Baron and Kenny 1986; Campbell et al. 2019). We propose that Ivy League education acts as a critical boundary condition, intensifying the connection between a CEO's political ideology and their engagement in ESG practices by providing the human and social capital needed to support ideologically driven decisions.

The eight Ivy League institutions—Harvard, Yale, Princeton, Columbia, Dartmouth, Brown, the University of Pennsylvania, and Cornell—are synonymous with academic excellence and social prestige (Hernández 2009; Lillard and Gerner 1999). Ivy League education significantly influences the careers of its graduates, particularly those who rise to corporate leadership positions, such as CEOs (Martelli and Abels 2010; Miller et al. 2015). Graduates of these schools benefit from rigorous education, expansive networks, and reputational capital, which collectively shape their perspectives and foster a sense of responsibility and leadership that extends into their professional lives (Lillard and Gerner 1999; Mullen 2009).

For CEOs, an Ivy League education offers access to elite social networks that enhance their influence in business, government, and other domains (Alba and Moore 1982; Chou et al. 2015; Miller et al. 2015). These networks are particularly relevant in the context of ESG strategy, where credibility and resources from influential connections can help align strategic decisions with societal expectations—including those related to ESG initiatives (Gassmann and Jackson Moore 2023).

Moreover, Ivy League education tends to instill a sense of security that enables CEOs to express their personal views with less fear of stigma or backlash (E. Kim 2024a). Consequently, liberal CEOs may feel encouraged to champion progressive ESG strategies, whereas conservative CEOs may become more persistent in opposing them. Supporting this, research indicates that Ivy League–educated CEOs “feel comfortable with pushing their opinions without fears of being stigmatized/devalued” (E. Kim 2024a, 1080).

Beyond social networks, Ivy League institutions emphasize critical thinking, problem-solving, and global awareness (Martelli and Abels 2010; Miller et al. 2015)—skills particularly valuable in navigating the complexities of modern corporate responsibility (Heubeck 2024b). These abilities enable CEOs to balance diverse stakeholder demands effectively (Miller et al. 2015), which is essential for ESG decision-making. For example, Yale University's Sustainability Plan 2025 exemplifies institutional commitment to sustainability, aiming to shape leaders who align business strategies with global sustainability goals (Goodall and Moore 2019; Yale University 2016).

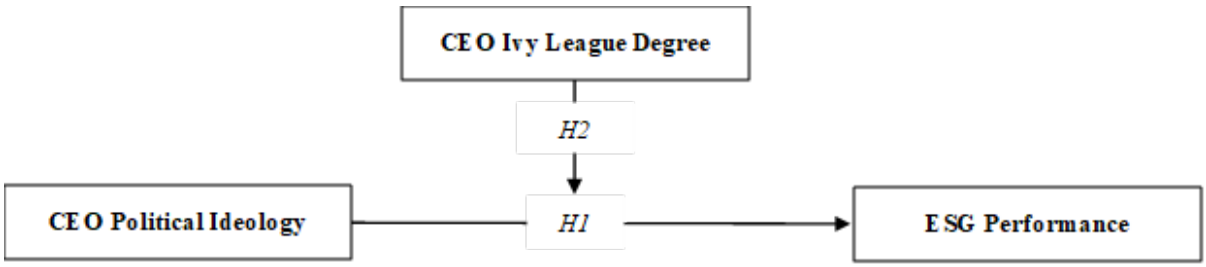
However, Ivy League education provides more than decision-making tools—it influences how political ideology shapes corporate strategy. For liberal CEOs, the values promoted within the Ivy League's academic and social networks may reinforce their commitment to ESG strategy. Conversely, for conservative CEOs, the privilege and social power conferred by an Ivy League education enable them to assert their ideological beliefs more decisively (Chou et al. 2015; Moore 2008). Thus, Ivy League–educated CEOs are uniquely positioned to leverage the impact of their political ideologies on ESG-related decisions.

In summary, Ivy League education is likely to moderate the relationship between CEO political ideology and ESG performance. By providing social capital (e.g., influential networks and reputational benefits) and human capital (e.g., advanced cognitive skills and global perspectives), Ivy League institutions empower CEOs to act with greater confidence and alignment with their ideological views (Bonilla-Silva et al. 2006; Chou et al. 2015; Moore 2008). This institutional context magnifies the tendencies of CEOs to prioritize their ideological inclinations in corporate decision-making. Based on these arguments, we propose the following hypothesis:

Hypothesis 2. The relationship between CEO political ideology and firm ESG performance is moderated by whether the CEO holds an Ivy League degree, with elite educational backgrounds amplifying the alignment between CEO political ideology and ESG outcomes.

In conclusion, the direct effect of CEO political ideology on ESG performance (Hypothesis 1) and the contingency effect of CEO Ivy League on this direct effect (Hypothesis 2) lead to this study's research model, as shown in Figure 1.

Figure 1 Research model: CEO political ideology, CEO Ivy League degree, and ESG performance



4.3 Research Methodology

4.3.1 Data Collection

In this study, we analyzed manufacturing firms from the S&P 900 mid-and large-cap index, covering the period from 2016 to 2019.[2]

To mitigate survivorship bias, we included all firms listed at any point within this timeframe (Brown et al. 1992; Carpenter and Lynch 1999). We chose this timeframe to avoid the years influenced by the Global Financial Crisis and the COVID-19 pandemic, minimizing potential disruptions to firm operations (Hermundsdottir et al. 2022; Issah et al. 2023). The start year, 2016, was specifically chosen as it marks a period of relative economic stability following the recovery from the Global Financial Crisis (Pavićević and Keil 2024). Moreover, beginning the sample in 2016 provided a sufficient number of observations while ensuring the dataset reflected recent trends in the manufacturing sector, such as technological advancements and Industry 4.0 (Ghobakhloo 2020), sustainability and environmental concerns (Buallay 2019; Heubeck 2024b), or trade policy uncertainty (Handley and Limão 2022), without being skewed by subsequent market disruptions.

We excluded 607 nonmanufacturing firms based on their primary NAICS codes, focusing on manufacturing firms due to significant variations in ESG practices across industries (Frink et al. 2003; Solakoglu 2013). Manufacturing firms face significant stakeholder pressure and play a crucial role in advancing sustainable practices (Buallay 2019; Mani et al. 2014), making them particularly well-suited for studying ESG factors and enabling meaningful comparisons between firms.

Our initial sample included 322 manufacturing firms from 2016 to 2019, for which we retrieved data from LSEG Eikon. When multiple CEOs were present in a year, we selected the longest serving CEO (Quigley and Hambrick 2015), which resulted in 419 CEOs. We collected missing and additional data from firms' annual statements and official company websites and compiled additional CEO data from publicly available information. Specifically, we manually retrieved and verified the correctness of demographic characteristics and education data from multiple sources, including annual reports, business social media platforms such as LinkedIn, reliable business data from Bloomberg, or other sources such as university websites, alumni associations, or the Notable Names Database.

Following previous research (e.g., Bhandari et al. 2020; Elnahas and Kim 2017), we collected political donation data from the Federal Election Commission (FEC) and the Center for Responsible Politics' OpenSecrets websites. We made significant efforts to ensure accurate data collection for each CEO. Using OpenSecrets, we initially searched by the CEO's first and last name. This search yielded correct results for unique names, but additional verification was needed for more common names. We used middle names, employers, and locations to accurately compile donation data, involving extensive research on a CEO's employment history and residences. This procedure resulted in over 22,000 donations, which we carefully screened to ensure correct attribution to the respective CEOs.

To ensure that the contributions of CEOs are a valid predictor of their political ideology, we deleted all donations to nonpartisan PACs or Super PACs from the dataset, as these donations reflect strategic interests (Bhandari et al. 2020; Ferris et al. 2019). We manually searched publicly available information to discern whether nondonating CEOs publicly identified as liberal or conservative or were party members. The absence of politically vocal CEOs without corresponding donation data further validates the reliability of the donation-based measure for assessing CEO political ideology.

The final research sample comprises the donations of 216 CEOs, which we matched with data sourced from LSEG Eikon and supplemented with hand-collected data (Francis et al. 2016; Hutton et al. 2014). The final dataset is an unbalanced panel comprising 769 firm-year observations from 233 firms.

4.3.2 Variable Measurements

4.3.2.1 Study Variables

The measurement and data sources for all variables are summarized in Table 1 and detailed below. ESG performance data were collected from LSEG Eikon, which is known for its

comprehensive coverage and objective measurement of ESG performance across environmental, social, and governance pillars (Del Vitto et al. 2023). LSEG Eikon has become one of the primary sources of ESG data used in empirical research.[3]

Table 1 Variable Descriptions

Variable type	Variable	Measurement	Data source
Study variables	*ESG performance*	ESG rating percentile scores; ranging from 0–100, with low scores corresponding to ESG laggards (D) and high scores to ESG leaders (A)	LSEG Eikon
	CEO political ideology	Calculated as the difference between contributions to the Republican and Democratic parties, divided by total contributions; this variable ranges from –1 (indicating very conservative ideology) to +1 (indicating very liberal ideology)	FEC data retrieved from OpenSecrets
	CEO Ivy League degree	Dummy variable coded 1 if the CEO has a degree from an Ivy League institution (Princeton University, Harvard University, Yale University, University of Pennsylvania, Brown University, Columbia University, Cornell University, Dartmouth College), 0 otherwise	LSEG Eikon, manual research (e.g., annual reports, LinkedIn, Bloomberg, university websites, alums associations, Notable Names database)
CEO-level control variables	*CEO age*	Current age of the CEO (calculated as: fiscal year – birth year)	LSEG Eikon, manual research
	CEO gender	Dummy variable coded 1 for female CEO, 0 for male CEO	LSEG Eikon, manual research
	CEO firm tenure	Years the CEO has worked at the firm (calculated as: current year – year started working for the firm)	LSEG Eikon, manual research
	CEO STEM degree	Dummy variable coded 1 for CEO with a degree in science, technology, engineering, or mathematics (i.e., higher education in STEM fields), 0 otherwise	LSEG Eikon, manual research
	CEO donation number	Number of political donations to parties or candidates	FEC data retrieved from OpenSecrets
Firm-level control variables	*Firm performance*	Return on assets (calculated as: net income divided by total assets)	LSEG Eikon
	Firm age	Years since incorporation (calculated as: current year – year of founding)	LSEG Eikon, manual research
	Firm size	Natural logarithm of the total number of employees	LSEG Eikon
	R&D intensity	R&D spending divided by sales, with missing values being replaced with 0 (Koh & Reeb, 2015)	LSEG Eikon

	Leverage	Total debt divided by total assets	LSEG Eikon
Governance-level control variables	*Slack resources*	Available slack, calculated as: current ratio = current assets divided by current liabilities (Marlin & Geiger, 2015)	LSEG Eikon
	Board size	Total number of directors	LSEG Eikon
	Board tenure	Average tenure of directors	LSEG Eikon
	Board gender diversity	Percentage of female directors (calculated as: number of female directors divided by board size)	LSEG Eikon
	Board affiliations	Average number of external directorial affiliations	LSEG Eikon

It categorizes ESG scores into percentiles ranging from D− (ESG laggards) to A + (ESG leaders) (LSEG 2023). We used the percentile score, ranging from 0 to 100. Our dependent variable, *ESG performance*, considers the ESG percentile score (ranging from 0 to 100) at t + 1 to mitigate causality concerns and consider the time lag between CEOs' decision-making and the eventual materialization of their decisions (Semadeni et al. 2022).

CEO political ideology is an index variable indicating a CEO's political orientation on the conservative–liberal spectrum (Elnahas and Kim 2017; Jost et al. 2009). The US bipartisan political system allows differentiation between liberal (Democratic Party) and conservative (Republican Party) ideologies (Weng and Yang 2024). Donations exceeding $200 to any political party must be reported to the FEC, offering a foundation for analyzing political leanings (Weng and Yang 2024). Given the stability of political ideology over time, we examined a CEO's entire donation history for a comprehensive understanding (Green et al. 2004).

To determine *CEO political ideology*, we measured the difference between their contributions to the Republican and Democratic parties, then divided by the total contributions. This approach reflects a CEO's political orientation on a scale from −1 (very conservative) to +1 (very liberal) (Hutton et al. 2015; Unsal et al. 2016). To confirm their political orientation, we manually searched publicly available data for CEOs without donation records. We excluded nondonating CEOs with no public political affiliation to prevent introducing bias to the sample by making assumptions about CEOs' political leanings.[4]

To assess whether CEOs possess an elite education, we examined whether the CEO holds a degree from an Ivy League institution. *CEO Ivy League degree* was measured using a dummy variable, indicating whether CEOs obtained degrees from one of the eight Ivy League institutions: Princeton, Harvard, Yale, University of Pennsylvania, Brown, Columbia, Cornell, and Dartmouth. These data were obtained from LSEG Eikon and supplemented with other reliable sources, including firms' annual reports, LinkedIn, Bloomberg, university websites, alumni associations, and the Notable Names database. The *CEO Ivy League degree* variable is coded with the value 1 if the CEO received a degree from an Ivy League institution (and 0 if not) (Miller et al. 2015).

4.3.2.2 Control Variables

We included several other variables in the research model to account for factors potentially affecting ESG performance. We included five control variables at the CEO level based on prior

research. CEO age and CEO gender account for risk preferences and potential effects on ESG performance (Glass et al. 2016; Le et al. 2024). CEO firm tenure captures the impact of accumulated firm-specific knowledge and socialization processes (Chen et al. 2019; Darouichi et al. 2021). CEO STEM degree, a dummy variable, indicates a background in science, technology, engineering, or mathematics that may influence decision-making concerning ESG performance (Cahyono et al. 2024; Zizka et al. 2021). Last, CEO donation number, reflecting political activism (J. Liu et al. 2023), was included as it may also relate to ESG performance.

We included six firm-level controls. Firm performance, measured by return on assets (ROA), reflects the potential of higher performing firms to invest in ESG initiatives (Huang 2021). Firm age considers older firms' prioritization of ESG due to reputational concerns (D'Amato and Falivena 2020). Firm size, measured by the natural logarithm of total employees, influences ESG performance due to resource variations and data availability between smaller and larger firms (Drempetic et al. 2020). R&D intensity, calculated as R&D spending to total sales, may drive ESG performance (Aguilera-Caracuel and Guerrero-Villegas 2018). Leverage, indicated by total debt to total assets, captures its presumed positive effect on ESG performance (Alareeni and Hamdan 2020). Lastly, slack resources represent discretionary financial resources firms could invest in ESG initiatives (Aguilera-Caracuel et al. 2015).

We included nine governance-level control variables. *Board size* accounts for monitoring differences between smaller and larger boards (Goodstein et al. 1994). *Board tenure* addresses potential declines in monitoring efficiency with longer director tenures (Jeong et al. 2021). *Board gender diversity* captured the dynamics of diverse boards (Issa 2023). *Board affiliations* control the benefits of more connected boards in advising on ESG issues (de Villiers et al. 2011). *Board independence* accounts for the enhanced ESG performance associated with more independent boards (Brinette et al. 2023). *CEO duality* considered the dual effect of CEOs on ESG priorities (de Villiers et al. 2011). *Management compensation* was included as highly compensated managers may be less concerned about ESG practices (de Villiers et al. 2011). *Sustainability compensation incentives* can motivate executives to prioritize CSR issues in their decision-making, impacting ESG performance (Baraibar-Diez et al. 2019). Last, the control *CSR sustainability committee* captures the possible benefits of a designated committee for ESG performance (Velte 2016).

Year controls and *industry controls* (two-digit NAICS level) were incorporated to mitigate potential time and industry-specific variances in ESG performance. These fixed effects help establish a causal link between CEO political ideology and ESG performance while accounting for temporal and sector-specific factors (Erhemjamts et al. 2013; Hutton et al. 2014).

Table 2 Descriptive Statistics: Means, Standard deviations, and Correlations

	Variable	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	ESG performance	57.453	0.657	1																						
2	CEO political ideology	–0.310	0.027	0.042	1																					
3	CEO Ivy League degree	0.189	0.014	–0.044	0.174***	1																				
4	CEO age	56.845	0.232	–0.068*	–0.218***	–0.087**	1																			
5	CEO gender	0.053	0.008	0.075**	0.148***	0.036	0.034	1																		
6	CEO STEM degree	0.570	0.018	–0.067*	0.112***	0.078**	0.014	0.032	1																	
7	CEO firm tenure	15.640	0.407	0.009	–0.000	0.009	0.011	–0.024	0.030	1																
8	CEO donation number	36.053	2.328	–0.040	–0.139***	0.022	0.157***	–0.052	–0.041	–0.047	1															
9	Firm performance	0.187	0.007	0.001	–0.038	–0.054	0.006	0.040	0.030	0.181***	–0.028	1														
10	Firm age	39.935	1.221	–0.025	0.004	–0.039	–0.089**	–0.007	–0.027	0.201***	–0.029	0.070**	1													
11	Firm size	9.385	0.050	–0.020	–0.042	–0.036	–0.009	–0.023	0.029	0.201***	0.022	0.036	0.317***	1												
12	R&D intensity	0.555	0.017	–0.018	0.028	–0.046	0.001	–0.019	–0.008	–0.042	–0.008	–0.215***	–0.109***	–0.276***	1											
13	Leverage	7.521	1.395	0.162***	0.009	0.028	–0.004	0.011	0.032	–0.044	0.063*	–0.059*	–0.066*	–0.222***	–0.023	1										
14	Slack resources	1.495	0.043	0.036	0.037	0.001	–0.006	–0.012	–0.042	0.022	0.009	–0.073**	–0.191***	–0.547***	0.541***	0.067*	1									
15	Board size	10.117	0.109	0.042	0.035	–0.023	–0.013	–0.022	0.005	0.102***	–0.011	0.080**	0.207***	0.324***	–0.072**	–0.084**	–0.158***	1								
16	Board tenure	8.928	0.131	0.011	–0.014	0.038	–0.060*	0.052	–0.008	0.358***	0.011	0.191***	0.069*	–0.103***	0.043	–0.010	0.222***	–0.025	1							
17	Board gender diversity	22.732	0.360	–0.008	–0.029	–0.071**	–0.022	–0.016	–0.001	0.088**	–0.012	0.126***	0.177***	0.273***	–0.073**	–0.064*	–0.213***	0.139***	0.003	1						
18	Board affiliations	0.926	0.016	–0.025	–0.020	–0.020	0.065*	–0.006	0.019	–0.067*	0.013	0.003	0.124***	0.384***	–0.046	–0.109***	–0.241***	0.256***	–0.343***	0.208***	1					
19	Board independence	84.358	0.315	0.011	–0.017	0.002	–0.040	–0.054	–0.044	–0.037	0.045	0.038	0.150***	0.088**	–0.100***	–0.030	–0.126***	0.142***	–0.189***	0.179***	0.178***	1				
20	CEO duality	0.664	0.017	0.072**	–0.028	–0.056	–0.055	–0.002	0.004	0.265***	–0.039	0.091**	0.215***	0.255***	–0.114***	–0.088**	–0.127***	0.088**	0.246***	0.160***	–0.008	–0.114***	1			
21	Management compensation	28.421	0.887	0.046	–0.041	–0.044	0.029	–0.012	0.045	0.025	0.046	0.038	0.115***	0.410***	0.141***	–0.098***	–0.183***	0.222***	–0.048	0.141***	0.249***	0.053	0.078**	1		
22	Sustainability compensation incentives	0.241	0.015	–0.025	0.039	–0.011	0.014	0.030	0.009	–0.054	0.037	–0.037	0.065*	0.135***	–0.031	0.021	–0.121***	0.035	–0.081**	0.145***	0.054	0.115***	0.017	0.082**	1	
23	CSR sustainability committee	0.555	0.018	0.577***	0.063*	–0.016	0.020	0.029	–0.004	0.004	0.008	–0.009	–0.001	–0.057	0.017	0.113***	0.062*	0.027	0.031	0.013	–0.001	–0.009	0.012	0.010	0.016	1

Notes: $N = 769$; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 3 Hierarchical Regression Results

	Model 1		Model 2		Model 3		Model 4	
ESG performance	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error	Coefficient	Std. Error
CEO political ideology			1.720**	0.815	2.282***	0.754	2.031**	0.930
CEO Ivy League degree					–4.913**	2.126	–4.754**	1.919
CEO political ideology x CEO Ivy League degree							0.921	2.339
CEO age	–0.032	0.124	0.003	0.128	0.032	0.115	0.039	0.114
CEO gender	2.543	3.825	1.706	4.260	3.532	3.780	3.447	3.850
CEO STEM degree	0.390	1.494	0.111	1.560	1.014	1.410	1.011	1.405
CEO firm tenure	0.023	0.024	0.022	0.024	0.018	0.024	0.018	0.024
CEO donation number	–0.003	0.011	–0.003	0.012	–0.004	0.010	–0.004	0.011
Firm performance	3.179**	1.427	3.322**	1.426	3.684***	1.410	3.679***	1.415
Firm age	–0.003	0.008	–0.004	0.008	–0.005	0.008	–0.005	0.008
Firm size	–0.067	0.251	–0.057	0.252	–0.041	0.253	–0.047	0.253
R&D intensity	0.295	0.865	0.359	0.868	0.300	0.876	0.316	0.881
Leverage	0.002	0.004	0.002	0.004	0.001	0.004	0.001	0.004
Slack resources	–0.143	0.311	–0.178	0.310	–0.176	0.311	–0.171	0.310
Board size	–0.020	0.084	–0.032	0.081	–0.043	0.081	–0.041	0.082
Board tenure	–0.029	0.079	–0.020	0.080	–0.014	0.081	–0.012	0.081

Board gender diversity	–0.024	0.027	–0.028	0.027	–0.028	0.027	–0.029	0.027
Board affiliations	–0.231	0.713	–0.209	0.713	–0.246	0.710	–0.238	0.711
Board independence	–0.007	0.031	–0.008	0.030	–0.009	0.030	–0.009	0.030
CEO duality	0.520	0.578	0.531	0.578	0.555	0.576	0.561	0.577
Management compensation	0.016*	0.009	0.017*	0.009	0.017*	0.009	0.017*	0.009
Sustainability compensation incentives	0.676	0.630	0.651	0.632	0.614	0.631	0.604	0.631
CSR sustainability committee	3.444**	1.413	3.428**	1.415	3.291**	1.400	3.307**	1.410
Constant	54.104***	8.092	53.067***	8.061	52.110***	7.542	51.598***	7.475
Year controls	YES		YES		YES		YES	
Industry controls	YES		YES		YES		YES	
R^2_{within}	0.246		0.248		0.257		0.258	
$R^2_{between}$	0.296		0.221		0.133		0.136	
$R^2_{overall}$	0.185		0.163		0.126		0.126	
F	5.26		5.67		5.45		5.22	
Prob > F	0.000		0.000		0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

4.4 Analysis Method and Results

4.4.1 Main Results

We selected a panel data estimator due to the longitudinal nature of our data, which is consistent with previous research grounded in upper echelons theory (e.g., O'Sullivan et al. 2024). First, we used the Breusch and Pagan (1980) test to determine the appropriate regression technique. The test results supported a random-effects model over a simple OLS regression ($p = 0.000$), validating the panel structure of the data (Baltagi 2021). We then conducted a Durbin–Wu–Hausman test to compare the random-effects and fixed-effects models, which confirmed the fixed-effects model as the preferred approach ($p = 0.000$) (Baltagi et al. 2003; Greene 2019). We then tested for possible heteroscedasticity using the modified Wald test, which detected heteroscedasticity ($p = 0.000$) (Greene 2019; Wooldridge 2002). Consequently, we implemented a fixed-effects model with robust standard errors clustered at the firm level.

We calculated descriptive and bivariate statistics for all study variables, as summarized in Table 2. The sampled firms showcase a mean ESG score of 57.45, which corresponds to a B− score equivalent to above-average ESG performance (LSEG 2023). The mean political liberalism of CEOs is −0.31, which suggests that CEOs lean toward conservative ideologies. Additionally, 18.9% of CEOs have obtained a degree from an Ivy League institution. Table 3 reports the hierarchical regression results. There is no evidence of multicollinearity in the data, with the maximum variance inflation factor (VIF) of 2.39 well below the conventional thresholds of 5 or 10 (Johnston et al. 2018; Kennedy 2008).

Hypothesis 1 proposed that CEO political ideology affects ESG performance. The coefficient of CEO political ideology is positive and significant in Model 1 ($b = 1.720$, $p = 0.036$), and this positive effect is consistent across all subsequent models. Due to the value range of CEO political ideology between −1 (conservative) to +1 (liberal), this finding implies that liberal CEOs promote firms' ESG performance, whereas conservative CEOs harm ESG performance. Thus, the findings support Hypothesis 1 by demonstrating that CEO political ideology significantly affects ESG performance.

Hypothesis 2 posited that Ivy League degree moderates the relationship between CEO political ideology and ESG performance. This moderation effect is tested in Model 4, where the interaction coefficient is positive but insignificant ($b = 0.921$, $p = 0.694$). Therefore, there is no evidence supporting the moderation effect of Ivy League degree on the CEO political ideology–ESG performance relationship, leading to the rejection of Hypothesis 2.

In conclusion, the regression results support the effect of CEO political ideology on ESG performance (Hypothesis 1) but not for the moderation effects of CEO Ivy League degree (Hypothesis 2). However, the results revealed that Ivy League degree has a significant negative direct effect on ESG performance (Model 3: b = −4.913, p = 0.022). Thus, the findings demonstrate that CEO Ivy League degree is not a moderator of the CEO political ideology–ESG performance relationship but a managerial background factor that directly hinders ESG performance. The "Discussion and Implications" section further details these results.

4.4.2 Additional Analyses

4.4.2.1 Endogeneity Analyses

First, we employed an instrumental variable (IV) two-stage least squares (2SLS) model. Following previous research on political ideology (Hutton et al. 2014; Kashmiri and Mahajan 2017), we initially considered four CEO characteristics as possible IVs: CEO age, CEO gender, CEO minority status (dummy coded 1 for nonwhite CEOs), and CEO military experience (dummy coded 1 for CEOs with military experience or education). However, since CEO age and gender were included in the regression model, they could not serve as IVs (Ullah et al. 2021). From a theoretical perspective, as also argued and confirmed in previous research on CEO political ideology (e.g., Hutton et al. 2014; Kashmiri and Mahajan 2017), these variables are valid instruments that are correlated with a CEO's political ideology but not with the dependent variable[5] while they are also stable even after the CEO is appointed.

We collected the data for CEO military education from executive biographies from LSEG Eikon and other reliable data sources (e.g., annual reports, LinkedIn, Bloomberg, university websites, alumni associations, and the Notable Names database). Due to concerns about the accuracy and definition of CEO minority status in prior research, we adopted an alternative approach as the traditional categorization into "white" and "nonwhite" overlooks the diversity within the nonwhite category (Bland 2020; Chen and Beach 2019; Holzman 2015). We introduce a dummy variable, *CEO BIPOC*, to identify minority CEOs as Black, Indigenous, and other people of color (Garcia 2020). We manually reviewed CEOs' official and social media profiles to determine their status.[6]

Additionally, we used *CEO home state political ideology* as an IV, determined by the state listed OpenSecrets to calculate the political ideology index. These IVs were valid as they were not part of the original regression model and were uncorrelated with the error term, as confirmed in postestimation tests.

The first-stage regression showed that all instruments were valid in predicting CEO political ideology (CEO BIPOC: $b = 0.366$, $p = 0.001$; CEO military experience: $b = -0.216$, $p = 0.025$; CEO home state political ideology: $b = 0.975$, $p < 0.001$). The F-value from the first-stage regression surpassed the recommended threshold of 10 and demonstrated statistical significance (see Table 4). Postestimation tests, including the overidentifying restrictions test, confirmed the validity of the instruments, indicating no correlation with the error term. Additionally, the Durbin–Wu–Hausman test provided insufficient evidence to suggest that the variables were endogenous, reinforcing their exogeneity. These findings corroborate the theoretical rationale that the selected instruments—rooted in prior literature on CEO political ideology (e.g., Hutton et al. 2014; Kashmiri and Mahajan 2017)—are valid and appropriate for addressing endogeneity concerns.

We used fixed effects (within) IV regression for the final second-stage regression with firm-level clustered robust standard errors. The results show that CEO political ideology remains positive and significant ($b = 5.570$, $p = 0.036$). These additional tests provide initial evidence that our model does not suffer from endogeneity and reinforce the robustness of the causal inferences.

Additionally, we employed a two-stage system generalized methods of moments model (GMMs) to address various sources of endogeneity, including dynamic endogeneity, unobserved heterogeneity, and simultaneity (Wintoki et al. 2012). To mitigate these concerns, we used lagged values of the dependent variable (ESG performance, measured at $t = 0$) as instruments. Our GMM results (see Table 5) confirm that the positive effect of CEO political ideology on ESG performance holds ($b = 10.886$, $p = 0.049$).

The diagnostic tests suggest that the model is robust. The first-order autocorrelation test revealed weak evidence of autocorrelation, which is expected in dynamic panel models. However, the second-order autocorrelation test could not be calculated due to the limited sample period (as it requires at least three periods). Although this missing result warrants attention, a more extended sample period is necessary to assess second-order serial correlation fully. Additionally, the insignificance of the Sargan and Hansen tests confirms that the instruments are valid and do not overidentify the model. The Difference-in- Hansen test further supports the exogeneity of the instrument subsets, indicating no exogeneity concerns. The Wald chi-squared test confirmed that the collective influence of the explanatory variables is statistically significant, explaining a substantial portion of the variation in ESG performance.

Although the inability to calculate the second-order autocorrelation test remains a limitation, the overall results suggest the model is well-specified. By instrumenting endogenous variables with their lagged values, the GMM approach ensures that the estimation is reliable and consistent (Khatib 2024; Ullah et al. 2021). Thus, despite the limitations, the model demonstrates robustness and provides meaningful insights into the relationship between CEO political ideology and ESG performance.[7]

Table 4 Endogeneity Test: 2SLS IV Regression Results

ESG performance	Coefficient	Std. Error
CEO political ideology	5.570**	2.659
Control variables	YES	
Year controls	YES	
Industry controls	YES	
R^2_{within}	0.236	
$R^2_{between}$	0.071	
$R^2_{overall}$	0.080	
F	834.30	
Prob > F	0.000	
F-test (first stage regression)	56.894***	
R^2 (first stage regression)	0.258	
Tests of endogeneity:		
Robust Chi^2	$p = 0.216$	
Robust regression	$p = 0.301$	
Test of overidentifying restrictions	$p = 0.575$	

Notes: Fixed effects (within) IV regression with robust standard errors clustered at the firm level, IVs = CEO BIPOC, CEO military education, CEO home state political ideology, number of observations = 769, number of groups = 233, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

4.4.2.2 ESG Pillar Scores Analyses

Due to the multifaceted nature of ESG, we also tested our research model using the three pillars of ESG performance (also with a 1-year lag) as dependent variables. For this test, we used the same set of control variables as in our primary research model. The ESG score used in the main analysis is an aggregated measure based on three pillar scores calculated by 10 underlying categories. Specifically, the first pillar is the environmental (E) score, which comprises the

categories (1) resource use, (2) emissions, and (3) innovation. The second is the social (S) score that contains the categories (4) workforce, (5) human rights, (6) community, and (7) product responsibility. The third is the governance (G) score that captures the categories (8) management, (9) shareholders, and (10) CSR strategy (for more details on the methodology, see LSEG 2023). Therefore, testing the effect of CEO political ideology on these individual pillars allows us to gain more nuanced insights into how CEO political ideology materializes across the environmental, social, and governance pillars and whether the influence of CEO political ideology varies between CEOs with an Ivy League degree and those without.

Notably, the differences across the three ESG pillars may stem from the unique scope of each pillar (Deng et al. 2024). For instance, the environmental pillar captures operational strategies related to environmental sustainability and innovation, such as emissions reduction (Trahan and Jantz 2023). The social pillar primarily addresses broader ethical and community-oriented initiatives, including workforce well-being and community engagement (Deng et al. 2024; Potharla et al. 2024). Meanwhile, the governance pillar focuses on sustainable corporate governance, emphasizing shareholder relations and management accountability (Agnese et al. 2023). Due to these distinctive characteristics, each ESG pillar may align differently with liberal versus conservative value systems, and Ivy League degree might moderate the degree to which political ideology impacts the emphasis placed on each ESG pillar.

First, as summarized in Table 6, the results showed that CEO political ideology does not affect environmental performance ($b = 0.343$, $p = 0.772$). The moderation effect of CEO Ivy League degree is also not present ($b = 4.646$, $p = 0.204$). However, the negative direct effect of the variable CEO Ivy League degree is consistent with our main results ($b = -8.463$, $p = 0.011$).

Table 5 Robustness Test: Two-Step System GMM Estimation Results

ESG performance	Coefficient	Std. Error
Lagged dependent variable	–0.326***	0.047
CEO political ideology	10.886**	5.520
Control variables	YES	
Year controls	YES	
Industry controls	YES	
Arellano–Bond AR(1) in first differences	p = 0.058	
Arellano–Bond AR(2) in first differences	p = missing	
Sargan Test	p = 0.541	
Hansen Test	p = 0.661	
Difference-in-Hansen test for GMM levels	p = 0.218	
Difference (null H = exogenous)	p = 0.828	
Wald $Chi^2(29)$	694.59	
Prob > Chi^2	0.000	

Notes: Two-step System GMM results with robust standard errors, ESG performance of period 0, number of observations = 514, number of groups = 214, number of instruments = 34; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Thus, we reveal that CEO political ideology has no effect on environmental performance and that the effect of CEO Ivy League degree is larger on environmental performance than on ESG performance.

Second, as summarized in Table 7, CEO political ideology has a positive and significant effect on social performance (b = 1.138, p = 0.062), CEO Ivy League degree has a negative and significant effect on social performance (b = −3.947, p = 0.072), and the moderation effect is insignificant (b = 2.442, p = 0.225). Therefore, the results concerning social performance remain consistent with our main results, albeit with slightly smaller coefficient sizes.

Third, as summarized in Table 8, CEO political ideology has a positive and significant effect on governance performance (b = 4.071, p = 0.019), CEO Ivy League degree has an insignificant effect on governance performance (b = −3.058, p = 0.223), and the moderation effect is significant (b = −5.242, p = 0.050). Consequently, our additional analysis shows different results from our main analysis as the positive effect of CEO political ideology is negatively moderated by CEO Ivy League degree, whereas CEO Ivy League degree has no direct effect on governance performance.

In summary, our additional tests in relation to the three ESG pillars reveal a complex interaction between CEO political ideology, CEO Ivy League degree, and ESG performance pillars. Specifically, the positive effect of CEO political ideology is driven by the social and governance pillars (Hypothesis 1), whereas the negative effect of CEO Ivy League degree is driven by the environmental and governance pillars. Concerning Hypothesis 2, the additional tests demonstrate that the positive relationship between CEO political ideology and governance performance is attenuated for CEOs with an Ivy League degree.

We additionally tested whether CEOs with an Ivy League undergraduate degree differ from those with a graduate degree. The difference between them could stem from the variances in the admission process and the type of education each degree offers (Miller et al. 2015). Also, individuals typically pursue undergraduate education earlier in their lives than graduate degrees often obtained during the later stages of professional life where a certain level of career achievement might already have been achieved. Thus, we also tested the moderation effect proposed in Hypothesis 2 by replacing CEO Ivy League degree with CEO Ivy League undergraduate and graduate degrees (dummy variables coded 1 if the CEO has obtained an undergraduate or graduate degree from an Ivy League institution, respectively).

In our sample, 5.7% of CEOs have obtained an undergraduate degree, and 15.6% have a graduate degree from an Ivy League institution. The results (summarized in Table 9) remain consistent as neither CEO Ivy League undergraduate ($b = 1.297$, $p = 0.749$) nor CEO Ivy League graduate degree ($b = -0.127$, $p = 0.958$) moderate the relationship between CEO political ideology and ESG performance. However, in line with our previous results, CEO Ivy League undergraduate degree ($b = -7.303$, $p = 0.030$) and CEO Ivy League graduate degree ($b = -3.570$, $p = 0.078$) have a direct negative and statistically significant effect on ESG performance. The results show that the negative effect of CEO Ivy League degrees seems to be driven primarily by the effect of undergraduate education due to the larger and more significant coefficient.

Table 6 Additional Test: Environmental Pillar Score as Dependent Variable

Environmental pillar score	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO political ideology	0.343	1.180	1.310	1.193	0.046	1.381
CEO Ivy League degree			–8.463**	3.312	–7.657***	2.728
CEO political ideology x CEO Ivy League degree					4.646	3.645
Control variables	YES		YES		YES	
Year controls	YES		YES		YES	
Industry controls	YES		YES		YES	
R^2_{within}	0.301		0.314		0.317	
$R^2_{between}$	0.228		0.141		0.135	
$R^2_{overall}$	0.166		0.139		0.133	
F	6.12		6.19		5.92	
Prob > F	0.000		0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 7 Additional Test: Social Pillar Score as Dependent Variable

Social pillar score	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO political ideology	1.138*	0.608	1.589**	0.634	0.924	0.703
CEO Ivy League degree			–3.947*	2.185	–3.523*	1.880
CEO political ideology x CEO Ivy League degree					2.442	2.008
Control variables	YES		YES		YES	
Year controls	YES		YES		YES	
Industry controls	YES		YES		YES	
R^2_{within}	0.236		0.240		0.241	
$R^2_{between}$	0.229		0.168		0.167	
$R^2_{overall}$	0.173		0.147		0.145	
F	4.76		4.25		3.95	
Prob > F	0.000		0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 8 Additional Test: Governance Pillar Score as Dependent Variable

Governance pillar score	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO political ideology	4.071**	1.729	4.420**	1.707	5.847***	1.995
CEO Ivy League degree			–3.058	2.500	–3.967	2.481
CEO political ideology x CEO Ivy League degree					–5.242*	2.660
Control variables	YES		YES		YES	
Year controls	YES		YES		YES	
Industry controls	YES		YES		YES	
R^2_{within}	0.075		0.076		0.080	
$R^2_{between}$	0.002		0.002		0.001	
$R^2_{overall}$	0.000		0.000		0.000	
F	2.20		2.15		2.07	
Prob > F	0.001		0.001		0.002	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$

Table 9 Additional Test: CEO Ivy League Undergraduate and Graduate Education as Moderation Variables

ESG performance	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO political ideology	2.219***	0.822	2.136**	0.882	2.128***	0.766	2.158**	0.877
CEO Ivy League undergraduate degree	–7.303**	3.352	–7.250**	3.203				
CEO political ideology x CEO Ivy League undergraduate degree			1.297	4.049				
CEO Ivy League graduate degree					–3.570*	2.018	–3.575*	1.988
CEO political ideology x CEO Ivy League graduate degree							–0.127	2.401
Control variables	YES		YES		YES		YES	
Year controls	YES		YES		YES		YES	
Industry controls	YES		YES		YES		YES	
R^2_{within}	0.258		0.258		0.253		0.253	
$R^2_{between}$	0.115		0.110		0.175		0.174	
$R^2_{overall}$	0.112		0.108		0.149		0.149	

F	5.69	5.46	5.46	5.28
Prob > F	0.000	0.000	0.000	0.000

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

4.4.2.3 Robustness Analyses

We performed several robustness analyses to confirm the validity of the results. First, we tested for the possibility of overcontrolling or inadequate controls by using a more conservative set of control variables that are likely to be exogenous. The additional analysis (see Table 10) shows that our results remain consistent with the main results when controlling for a minimum of relevant variables (firm age, firm size, board size, board independence, year, and industry dummies) or even when controlling for no firm or governance factors (i.e., only year and industry dummies). Thus, we can rule out that the choice of control variables has driven the effects in our results.

Second, we dropped all CEOs with a total donation amount below $1000 to rule out the possibility that less donating CEOs are less stable in their political ideology. The results using this modified subsample remained consistent with our main results (see Table 11). Thus, we can rule out that sample selection has influenced our results.

Third, we used alternative measures of CEO political ideology to rule out that the measurement has influenced the results (see Table 12). The first was *CEO liberal*, a dummy variable taking the value of 1 if a CEO made more than 50% of their donations to Democrats and 0 otherwise (Bhandari and Golden 2021; Hutton et al. 2014). The results remained in line with the main results; the positive effect of CEO liberal on ESG performance was even stronger using the alternative measure than in the original model ($b = 3.468$, $p = 0.011$). The second was *CEO strong liberal*, a dummy variable coded 1 if a CEO made no donations to Republicans throughout their entire donation history (Elnahas and Kim 2017). The results also remained robust; the coefficient of CEO strong liberal on ESG performance was even stronger than in the original model ($b = 3.719$, $p = 0.009$). The negative direct effect of CEO Ivy League degree on ESG performance persists across all models.

Fourth, we winsorized all continuous variables at the 1% and 99% levels to rule out that our results were impacted by potential outliers (see Table 13). Our main results remain consistent when using winsorized variables. Specifically, the effect of CEO political ideology on ESG remains positive and significant ($b = 2.175$, $p = 0.006$), and the moderation effect remains positive but insignificant ($b = 0.694$, $p = 0.767$). The negative effect of CEO Ivy League degree

on ESG also persisted across the models using winsorized variables ($b = -5.073$, $p = 0.017$). Therefore, we can effectively rule out that outliers influence our results. These robustness analyses collectively demonstrate that our results remain consistent across various model specifications.

Table 10 Robustness Test: Different Control Variables

ESG performance	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO political ideology	1.406**	0.604	1.881***	0.664	1.782**	0.749	1.344**	0.600	1.798***	0.642	1.663**	0.737
CEO Ivy League degree			–3.941*	2.198	–3.884*	2.016			–3.900*	2.192	–3.823*	2.002
CEO political ideology x CEO Ivy League degree					0.319	2.144					0.448	2.160
Firm age	–0.001	0.008	–0.002	0.008	–0.002	0.008						
Firm size	0.072	0.203	0.079	0.203	0.076	0.202						
Board size	–0.020	0.080	–0.025	0.080	–0.024	0.080						
Board independence	–0.007	0.028	–0.007	0.028	–0.007	0.028						
Constant	54.340***	2.834	55.236***	2.902	55.203***	2.864	54.201***	0.799	55.020***	0.920	54.972***	0.860
Year controls	YES		YES		YES		YES		YES		YES	
Industry controls	YES		YES		YES		YES		YES		YES	
R^2_{within}	0.212		0.218		0.218		0.211		0.218		0.218	
$R^2_{between}$	0.008		0.009		0.010		0.009		0.010		0.010	
$R^2_{overall}$	0.023		0.025		0.025		0.024		0.026		0.026	
F	9.87		9.36		8.61		15.76		14.02		12.31	
Prob > F	0.000		0.000		0.000		0.000		0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 772, number of groups = 233, $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 11 Robustness Test: Minimum Donation Amount of $1000

ESG performance	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO political ideology	2.296***	0.810	1.952*	1.104
CEO Ivy League degree	–5.110**	2.273	–4.842**	2.025
CEO political ideology x CEO Ivy League degree			1.063	2.596
Control variables	YES		YES	
Year controls	YES		YES	
Industry controls	YES		YES	
R^2_{within}	0.254		0.254	
$R^2_{between}$	0.137		0.143	
$R^2_{overall}$	0.124		0.127	
F	4.93		4.75	
Prob > F	0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 742, number of groups = 225, $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 12 Robustness Test: Alternative Measures of CEO Political Ideology

ESG performance	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*	*Coefficient*	*Std. Error*
CEO liberal	3.468**	1.345	3.451*	1.883				
CEO strong liberal					3.719***	1.407	4.380***	1.673
CEO Ivy League degree	–4.443**	2.137	–4.459	2.795	–5.020**	2.138	–4.601*	2.457
CEO liberal x CEO Ivy League degree			0.041	2.876				
CEO strong liberal x CEO Ivy League degree							–2.058	3.574
Control variables	YES		YES		YES		YES	
Year controls	YES		YES		YES		YES	
Industry controls	YES		YES		YES		YES	
R^2_{within}	0.258		0.258		0.257		0.257	
$R^2_{between}$	0.138		0.138		0.117		0.107	
$R^2_{overall}$	0.127		0.127		0.113		0.107	
F	5.15		4.98		5.59		5.47	
Prob > F	0.000		0.000		0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 13 Robustness Test: Winsorized Variables

ESG performance	*Coefficient*	*Robust Std. Error*	*Coefficient*	*Robust Std. Error*
CEO political ideology	2.175***	0.781	1.982**	0.963
CEO Ivy League degree	–5.073**	2.104	–4.952**	1.901
CEO political ideology x CEO Ivy League degree			0.694	2.339
Control variables	YES		YES	
Year controls	YES		YES	
Industry controls	YES		YES	
R^2_{within}	0.255		0.256	
$R^2_{between}$	0.122		0.124	
$R^2_{overall}$	0.118		0.119	
F	5.26		5.02	
Prob > F	0.000		0.000	

Notes: Fixed effects with robust standard errors clustered at the firm level, number of observations = 769, number of groups = 233, all continuous variables are winsorized at the 1% and 99% levels; $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

4.5 Discussion and Implications

This study addresses a timely yet underexplored topic: the relationship between CEOs' political ideology and their firms' ESG performance and the moderating role of elite education from Ivy League institutions. In support of our first hypothesis, we found that CEO political ideology significantly affects ESG outcomes. Specifically, liberal CEOs are associated with higher ESG performance, whereas conservative CEOs tend to deter ESG initiatives. These findings transfer the core principles of political psychology (e.g., Jost et al. 2003; Jost and Amodio 2012) to upper echelons theorizing (Hambrick 2007; Hambrick and Mason 1984), reinforcing the view that liberal CEOs, characterized by greater openness to change and concern for societal welfare in their decision-making, are more likely to prioritize ESG efforts. Conversely, conservative CEOs prioritize profitability and shareholder value in their more closed-system decision-making. They are more reluctant to engage in ESG initiatives, which may be perceived as diverging from traditional business goals.

Through its focus on ESG strategy, our study adds new insights into the political ideology literature within the upper echelons framework. Specifically, we offer a nuanced understanding of how CEO political ideology affects corporate ESG efforts. Unlike CSR, which has been widely studied (e.g., Chin et al. 2013; Gupta et al. 2021), ESG represents a broader framework that encompasses not only social responsibility but also environmental and governance dimensions (Gillan et al. 2021; Huang 2021). Given the increasing political polarization

surrounding ESG, particularly in the US (Winston 2023), our findings underscore the importance of understanding how ideological perspectives shape corporate ESG strategies.

Moreover, this study contributes to a microlevel understanding of the drivers behind ESG performance by revealing how political ideology differentially affects the three pillars of ESG performance. This offers an important extension of previous research, which has primarily focused on the role of CEO political ideology in CSR (e.g., Chin et al. 2013; Gupta et al. 2021). By focusing on ESG, we highlight the broader implications for firms seeking to navigate corporate sustainability challenges in an increasingly politicized environment. Our additional analyses foster a nuanced understanding of how CEOs' political ideology translates into ESG outcomes as we examine the effects on the three ESG pillars. Although our findings confirm the influence of CEO political ideology on the social and governance pillars of ESG, we observed no significant relationship between political ideology and environmental performance, contrasting previous research (e.g., Chin et al. 2013; Y. Kim 2024b). This finding suggests that environmental performance might be driven by factors beyond the CEO's political ideology.

First, CEOs may have less latitude over environmental issues than social or governance issues. Strict legal standards and industry-specific requirements related to environmental issues might lead to greater uniformity in environmental outcomes across firms (Delmas and Toffel 2008; Shao et al. 2020), regardless of a CEO's political ideology. Second, external stakeholder pressures may push liberal and conservative CEOs to adopt environmental strategies. For this reason, environmental issues have become one of the top boardroom topics (Deloitte Global 2022), and the focus on ESG has increasingly shifted disproportionately toward environmental issues (Mrchkovska et al. 2023). Additionally, environmental initiatives often involve long-term risks and require sustained investment before tangible outcomes are realized (Bansal and DesJardine 2014; Qadir et al. 2021). CEOs may prioritize social and governance initiatives over longer-term environmental efforts, which can yield more immediate reputational benefits. Environmental issues are also frequently perceived as operational or technical challenges, which may lead CEOs to approach them from a more apolitical standpoint (Ioannou and Serafeim 2023). Therefore, the effect of a CEO's political ideology on environmental outcomes might be diluted.

Furthermore, this study provides valuable insights into the intersection of CEO political ideology, Ivy League education, and ESG performance. By demonstrating that Ivy League education does not moderate the relationship between a CEO's political ideology and ESG

performance—but instead has a direct negative effect on ESG—our study highlights noteworthy discussion points and implications for future theorizing.

For one, the absence of the moderation effect suggests that a CEO's elite educational background does not alter how their political beliefs influence ESG practices. This novel finding suggests that CEOs may bring existing ideological views into their executive role, where these beliefs guide their decision-making on ESG issues independently of their Ivy League education. In this sense, a CEO's political ideology will likely remain intact and uninfluenced by the perspectives acquired through elite education.

We find contrasting evidence to the upper echelon's presumption that a CEO's political ideology provides the primary cognitive framework for ESG-related decisions. Unlike Miller et al. (2015), we do not find evidence supporting the "strategic value to an Ivy education" (p. 942) within the ESG context. Instead, our study suggests that Ivy League education itself directly correlates with lower ESG performance, irrespective of political ideology. In other words, our results do not support the notion that CEOs use their Ivy League background to reinforce ideologically driven preferences for more or less ESG emphasis.

Instead, the findings reveal two largely independent channels. First, the *ideological channel* highlights how a CEO's political ideology shapes the decision-making preferences regarding ESG initiatives. Liberal CEOs are ideologically inclined to promote ESG strategy, driven by their open-system decision-making approach and stakeholder-oriented values. In contrast, conservative CEOs tend to deprioritize ESG outcomes, favoring a shareholder-centric approach rooted in a closed-system decision-making framework.

Second, the *elite education channel* captures how an Ivy League background affects decision-making by orienting it toward traditional business goals. Ivy League–educated CEOs may prioritize career advancement and reputation-building, focusing on financial metrics rather than ESG outcomes. Thus, Ivy League education appears to influence the *means* to achieve corporate goals—by providing connections and resources—rather than the *ends*, especially regarding ESG strategy.

In this sense, Ivy League education may provide reputational benefits and prestige, often associated with career progression rather than profoundly influencing a CEO's values or ideological approach to specific business issues like ESG strategy. With respect to this, Ivy League education could potentially override personal political preferences. For instance, even if liberal CEOs are ideologically inclined to value ESG, their elite educational background may steer them toward prioritizing more conventional business objectives over their personal

political leanings. Thus, the influence of Ivy League education appears to impact decision-making processes related to ESG strategy by emphasizing reputational and traditional business outcomes over ideologically motivated ones.

It is important to note that, at first glance, our findings appear to contradict a key study on Ivy League education by Miller et al. (2015), which concluded that firms led by Ivy League–educated CEOs, particularly those with undergraduate degrees, achieve higher and more sustained market valuations. However, our results are consistent with the underlying rationale: Financial performance often aligns with shareholder interests, which may benefit from the elite networks cultivated by Ivy League–educated CEOs. These networks, however, could negatively impact ESG performance by prioritizing shareholder value over broader social responsibilities. The additional analysis highlights that the negative impact of Ivy League education on ESG performance is especially evident among CEOs with undergraduate degrees. This finding suggests that formative educational experiences at elite institutions may cultivate values or behaviors less aligned with strong ESG outcomes. Consistent with imprinting theory (Marquis and Tilcsik 2013), the results underscore that formative life experiences, particularly during undergraduate education, have enduring consequences in shaping behaviors and decision-making processes that influence ESG performance.

Altogether, our study expands upper echelons theory by identifying how these microlevel factors—political ideology and elite education—function as channels influencing strategic outcomes in relation to contemporary ESG challenges.

4.5.1 Practical Recommendations

This study offers several practical implications by revealing that CEOs' political ideologies and Ivy League education influence their decision-making concerning ESG outcomes. Consequently, it is crucial for CEOs to critically assess how their personal traits and educational backgrounds align with the outcomes they seek to achieve, which might involve deliberate efforts to balance their innate decision-making tendencies (Chin et al. 2021). For instance, CEOs with conservative political views might consider adopting a more collaborative approach within diverse top management teams (TMTs) to enhance their focus on ESG priorities.

Similarly, our findings suggest that corporate boards should tailor governance structures to complement their CEOs' decision-making styles to support the organization's overarching goals. For firms committed to ESG objectives, granting liberal-leaning CEOs greater autonomy may leverage their natural inclinations toward decision-making that aligns with these goals. On the other hand, this study underscores that an Ivy League education—typically viewed

positively—may inadvertently hinder stakeholder interests in relation to ESG issues. Companies led by more conservative or Ivy League–educated CEOs—who might intrinsically deprioritize ESG initiatives— should emphasize a team-based approach in decision-making. Such a strategy encourages leveraging the broader perspectives of the entire TMT rather than relying solely on the CEO's individual preferences.

Beyond implications for decision-making frameworks and governance structures, this study offers suggestions for top management staffing, incentive structures, and leadership development programs. Firms should adopt a holistic approach to talent management by considering the diversity of political ideologies and educational backgrounds, which can foster a broader range of perspectives within the organization— particularly valuable for navigating complex ESG issues. Leadership development programs should aim to broaden the perspectives of CEOs, especially those who are politically conservative or Ivy League–educated, by enhancing social awareness and stakeholder-oriented decision-making skills. Incorporating ESG metrics into CEO performance evaluations can further incentivize alignment with sustainability goals, leading to improved overall ESG performance. This approach ensures that CEOs are motivated to prioritize ESG initiatives, ultimately resulting in enhanced organizational outcomes in relation to ESG.

By implementing these practical implications, organizations can more effectively align their strategies with desired outcomes and contribute positively to broader societal and environmental challenges, advancing a more sustainable and equitable future in light of today's grand societal challenges.

4.5.2 Future Research

Our findings indicate that a CEO's political ideologies significantly predict their values and decision-making processes. Politically liberal CEOs tend to adopt a more stakeholder-oriented perspective of business responsibilities compared to their conservative counterparts. Future research might explore the impact of CEO political ideology on ESG outcomes across different countries and political systems or investigate the political ideologies of entire TMTs (Chin et al. 2013).

In pursuing this line of inquiry, future research should incorporate additional factors when assessing the impact of political ideology on ESG performance to develop a more comprehensive understanding of the underlying dynamics. Further studies might also investigate the role of moderating factors, such as CEO power (Brahma and Economou 2024; Chu et al. 2023), within the context of CEO political ideology and ESG strategy, as power

dynamics may play a critical role in influencing CEOs' capacity to shape strategic outcomes (Chin et al. 2013).

Our research lays crucial groundwork for further exploration of the intersection between CEO political ideology, decision-making, and corporate strategy. Future studies could investigate the long-term impact of ESG decisions influenced by political ideology on firm performance or conduct cross-cultural analyses to explore how the link between CEO political ideology and ESG practices differs across various cultural or political settings. In conclusion, this study further enhances the academic understanding of how CEOs' personal backgrounds shape their decision-making processes and organizational outcomes. The findings emphasize the need for top managers, organizations, and stakeholders to critically evaluate the biases and inequities associated with CEOs' political ideologies and elite educational backgrounds.

Notes

[1]We acknowledge the distinction between ESG and CSR. Nonetheless, our focus is on studying the effect of CEO political ideology on the three ESG pillars. ESG encompasses a broader spectrum of issues compared to CSR, covering environmental aspects (like energy efficiency and pollution control), social considerations (such as community engagement and workplace safety), and governance factors (including executive accountability and ethical business practices) (Martiny et al. 2024). Because of the comprehensive scope and quantifiable nature of ESG performance (LSEG 2023), we use firms' ESG performance as a metric to assess the impact of CEO political ideology on the three ESG pillars.

[2]Our dependent variable, ESG performance, is lagged by one year, extending our dataset through 2020.

[3]ESG ratings can vary among different ESG rating agencies due to the absence of standardized ESG disclosures and the inherent influence of rating agencies (Berg et al. 2022). Although we utilized LSEG Eikon, one of the most used ESG rating agencies, it is possible that ESG data from other agencies could have produced different results because of the inconsistencies in ESG ratings across various data providers.

[4]We acknowledge that nondonating CEOs may hold their political beliefs private, especially with increasing public scrutiny against CEO activism (Feix and Wernicke 2024). Assuming that nondonating CEOs are politically moderate might introduce severe bias to the sample because CEOs might not donate due to fearing public scrutiny for their personal political ideology. Thus, to differentiate between different political ideologies, previous research has used separate categories for politically liberal, conservative, moderate, and unaffiliated individuals (e.g., Vaidyanathan et al. 2011). This argumentation also corresponds to political research, which finds that individuals generally donate to candidates and parties that align with their own political ideology (Barber 2016). In limiting our analysis to donating CEOs, we can effectively gauge CEOs' personal political convictions and uncover the undistorted effect of CEO political orientation on ESG. We excluded 83 nondonating CEOs, for which no public data on their political donation was available. This step is also necessary to conduct additional tests and assess potential endogeneity in our research data.

[5]We note that recent research has begun to explore the influence of CEO minority status on CSR. However, this study by Do and Herbohn (2024) focused on the moderation effect of CEO minority status on the main relationship between board ethnic diversity and CSR. Our use of CEO BIPOC status, as an extension of CEO minority status, does not conflict with this study, as we focus on a structurally different outcome variable, and their use of minority status as a

moderator differs fundamentally from our use of the variable as an instrument to capture exogenous variation in CEO political ideology. Our approach is further validated by postestimation diagnostics, which confirm the exogeneity of this instrument.

[6]We are highly aware of the potential racial bias introduced by our own predispositions in reviewing a CEO's profile photographs. We used this alternate definition of CEO minority status to provide a more comprehensive account of minority status and raise the awareness that the distinction into “white” and “nonwhite” categories might be highly problematic. We urge the readers to be aware of this problem in the existing research and hope that our differentiated examination has remedied—and at least not contributed to—racial biases.

[7] Despite adhering to best practices, recent methodological guidelines, and employing a two-method approach combining the IV 2SLS and GMM models to support our main findings, we acknowledge that endogeneity cannot be definitively ruled out in our research model. Readers are advised to interpret the results with this limitation in mind.

4.6 References

Agnese, P., Battaglia, F., Busato, F., & Taddeo, S. (2023). ESG controversies and governance: Evidence from the banking industry. *Finance Research Letters*, *53*, 103397. doi:10.1016/j.frl.2022.103397

Aguilera-Caracuel, J., & Guerrero-Villegas, J. (2018). How corporate social responsibility helps MNEs to improve their reputation. The moderating effects of geographical diversification and operating in developing regions. *Corporate Social Responsibility and Environmental Management*, *25*(4), 355–372. doi:10.1002/csr.1465

Aguilera-Caracuel, J., Guerrero-Villegas, J., Vidal-Salazar, M. D., & Delgado-Márquez, B. L. (2015). International cultural diversification and corporate social performance in multinational enterprises: The role of slack financial resources. *Management International Review*, *55*(3), 323–353. doi:10.1007/s11575-014-0225-4

Alareeni, B. A., & Hamdan, A. (2020). ESG impact on performance of US S&P 500-listed firms. *Corporate Governance*, *20*(7), 1409–1428. doi:10.1108/CG-06-2020-0258

Alba, R. D., & Moore, G. (1982). Ethnicity in the American elite. *American Sociological Review*, *47*(3), 373–383. doi:10.2307/2094993

Armstrong, R. (2023). Anti-ESG investing. *Financial Times*. Retrieved from https://www.ft.com/content/0caf08cd-88d8-4c17-b694-b5ed757b0b47

Bailey, E. E., & Helfat, C. E. (2003). External management succession, human capital, and firm performance: An integrative analysis. *Managerial and Decision Economics*, *24*(4), 347–369. doi:10.1002/mde.1119

Baltagi, B. H. (2021). *Econometric analysis of panel data* (6th ed.). Springer International Publishing.

Baltagi, B. H., Bresson, G., & Pirotte, A. (2003). Fixed effects, random effects or Hausman–Taylor?: A pretest estimator. *Economics Letters*, *79*(3), 361–369. doi:10.1016/S0165-1765(03)00007-7

Bansal, P., & DesJardine, M. R. (2014). Business sustainability: It is about time. *Strategic Organization*, *12*(1), 70–78. doi:10.1177/1476127013520265

Baraibar-Diez, E., Odriozola, M. D., & Fernández Sánchez, J. L. (2019). Sustainable compensation policies and its effect on environmental, social, and governance scores. *Corporate Social Responsibility and Environmental Management*, *26*(6), 1457–1472. doi:10.1002/csr.1760

Barber, M. (2016). Donation motivations: Testing theories of access and ideology. *Political Research Quarterly*, *69*(1), 148–159. doi:10.1177/1065912915624164

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, *51*(6), 1173–1182. doi:10.1037//0022-3514.51.6.1173

Bartels, L. M. (2002). Beyond the running tally: Partisan bias in political perception. *Political Behavior*, *24*(2), 117–150. doi:10.1023/A:1021226224601

Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, *26*(6), 1315–1344. doi:10.1093/rof/rfac033

Bhandari, A., & Golden, J. (2021). CEO political preference and credit ratings. *Journal of Corporate Finance*, *68*, 101909. doi:10.1016/j.jcorpfin.2021.101909

Bhandari, A., Golden, J., & Thevenot, M. (2020). CEO political ideologies and auditor-client contracting. *Journal of Accounting and Public Policy*, *39*(5), 106755. doi:10.1016/j.jaccpubpol.2020.106755

Bland, T. (2020). The term “people of color” fails to be properly inclusive of the black community. *The Daily Aztec*. Retrieved from https://thedailyaztec.com/100319/opinion/opinion-the-term-people-of-color-fails-to-be-properly-inclusive-of-the-black-community/

Bonilla-Silva, E., Goar, C., & Embrick, D. G. (2006). When whites flock together: The social psychology of white habitus. *Critical Sociology*, *32*(2–3), 229–253. doi:10.1163/156916306777835268

Brahma, S., & Economou, F. (2024). CEO power and corporate strategies: A review of the literature. *Review of Quantitative Finance and Accounting*, *62*(3). doi:10.1007/s11156-023-01231-7

Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, *47*(1), 239–253. doi:10.2307/2297111

Brinette, S., Sonmez, F. D., & Tournus, P. S. (2023). ESG controversies and firm value: Moderating role of board gender diversity and board independence. *IEEE Transactions on Engineering Management*, 71, 4298–4307. doi:10.1109/TEM.2023.3236667

Brown, S. J., Goetzmann, W., Ibbotson, R. G., & Ross, S. A. (1992). Survivorship bias in performance studies. *Review of Financial Studies*, *5*(4), 553–580. doi:10.1093/rfs/5.4.553

Buallay, A. (2019). Sustainability reporting and firm's performance: Comparative study between manufacturing and banking sectors. *International Journal of Productivity and Performance Management*, *69*(3), 431–445. doi:10.1108/IJPPM-10-2018-0371

Busch, D. (2023). EU Sustainable Finance Disclosure regulation. *Capital Markets Law Journal*, *18*(3), 303–328. doi:10.1093/cmlj/kmad005

Cabreros, D., de la Fuente, G., & Velasco, P. (2024). From dawn to dusk: The relationship between CEO career horizon and ESG engagement. *International Review of Financial Analysis*, *93*, 103200. doi:10.1016/j.irfa.2024.103200

Cain, M. D., & McKeon, S. B. (2016). CEO personal risk-taking and corporate policies. *Journal of Financial and Quantitative Analysis*, *51*(1), 139–164. doi:10.1017/S0022109016000041

Cahyono, S., Ardianto, A., & Nasih, M. (2024). Breaking barriers: CEOs STEM educational background and corporate climate change disclosure. *International Journal of Accounting and Information Management*, *32*(4), 651–684. doi:10.1108/IJAIM-10-2023-0268

Campbell, R. J., Jeong, S.-H., & Graffin, S. D. (2019). Born to take risk? The effect of CEO birth order on strategic risk taking. *Academy of Management Journal*, *62*(4), 1278–1306. doi:10.5465/amj.2017.0790

Cannella, A. A., & Holcomb, T. R. (2005). A multi-level analysis of the upper-echelons model. In F. Dansereau & F. J. Yammarino (Eds.), *Multi-level issues in strategy and methods* (pp. 195–237). Bingley, England: Emerald Group Publishing Limited.

Carpenter, J. N., & Lynch, A. W. (1999). Survivorship bias and attrition effects in measures of performance persistence. *Journal of Financial Economics*, *54*(3), 337–374. doi:10.1016/S0304-405X(99)00040-9

Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, *34*(4), 39–48. doi:10.1016/0007-6813(91)90005-G

Chandler, J. A., Kim, Y., Waddingham, J. A., & Hill, A. D. (2023). Going global? CEO political ideology and the choice between international alliances and international acquisitions. *Journal of International Business Studies*, *54*(8), 1441–1470. doi:10.1057/s41267-023-00607-0

Chen, D., & Beach, R. (2019). Readers react: The problem with ‘people of color’: It implies whiteness is the default. *Los Angeles Times*. Retrieved from

https://www.latimes.com/opinion/readersreact/la-ol-le-people-of-color-white-people-privilege-20190504-story.html

Chen, W. (Tina), Zhou, G. (Stephen), & Zhu, X. (Kevin). (2019). CEO tenure and corporate social responsibility performance. *Journal of Business Research*, *95*, 292–302. doi:10.1016/j.jbusres.2018.08.018

Cheng, C. S. A., Huang, W., Li, S., & Zhang, Y. (Tony). (2024). CEO political contribution and accounting conservatism. *Journal of Accounting, Auditing & Finance*, 1–31. doi:10.1177/0148558X231215894

Chin, M. K., Hambrick, D. C., & Treviño, L. K. (2013). Political ideologies of CEOs: The influence of executives' values on corporate social responsibility. *Administrative Science Quarterly*, *58*(2), 197–232. doi:10.1177/0001839213486984

Chin, T., Wang, W., Yang, M., Duan, Y., & Chen, Y. (2021). The moderating effect of managerial discretion on blockchain technology and the firms' innovation quality: Evidence from Chinese manufacturing firms. *International Journal of Production Economics*, *240*, 108219. doi:10.1016/j.ijpe.2021.108219

Chou, R., Lee, K., & Ho, S. (2015). Love is (color)blind: Asian Americans and white institutional space at the elite university. *Sociology of Race and Ethnicity*, *1*(2), 302–316. doi:10.1177/2332649214553128

Chu, H.-L., Liu, N.-Y., & Chiu, S.-C. (2023). CEO power and CSR: The moderating role of CEO characteristics. *China Accounting and Finance Review*, *25*(1), 101–121. doi:10.1108/CAFR-03-2022-0027

Conover, P. J., & Feldman, S. (1981). The origins and meaning of liberal/conservative self-identifications. *American Journal of Political Science*, *25*(4), 617–645. doi:10.2307/2110756

Cronqvist, H., Makhija, A. K., & Yonker, S. E. (2012). Behavioral consistency in corporate finance: CEO personal and corporate leverage. *Journal of Financial Economics*, *103*(1), 20–40. doi:10.1016/j.jfineco.2011.08.005

D'Amato, A., & Falivena, C. (2020). Corporate social responsibility and firm value: Do firm size and age matter? Empirical evidence from European listed companies. *Corporate Social Responsibility and Environmental Management*, *27*(2), 909–924. doi:10.1002/csr.1855

Darouichi, A., Kunisch, S., Menz, M., & Cannella Jr, A. A. (2021). CEO tenure: An integrative review and pathways for future research. *Corporate Governance: An International Review*, *29*(6), 661–683. doi:10.1111/corg.12396

de Villiers, C., Naiker, V., & van Staden, C. J. (2011). The effect of board characteristics on firm environmental performance. *Journal of Management*, *37*(6), 1636–1663. doi:10.1177/0149206311411506

Del Vitto, A., Marazzina, D., & Stocco, D. (2023). ESG ratings explainability through machine learning techniques. *Annals of Operations Research*, 1–30. doi:10.1007/s10479-023-05514-z

Delmas, M. A., & Toffel, M. W. (2008). Organizational responses to environmental demands: Opening the black box. *Strategic Management Journal*, *29*(10), 1027–1055. doi:10.1002/smj.701

Deloitte Global. (2022). *CEOs and climate action* (pp. 1–20). Retrieved from https://www.deloitte.com/global/en/issues/climate/ceos-and-climate-action.html

Deng, G., Ma, S., Yan, J., Shuai, C., & Liu, H. (2024). Dissecting the impact of the three E, S, G pillars on credit risk. *Economic Analysis and Policy*, *83*, 301–313. doi:10.1016/j.eap.2024.06.006

Do, T. (Peter), & Herbohn, K. (2024). The impact of board ethnic diversity and Chief Executive Officer role on corporate social responsibility. *Accounting & Finance*, *64*(1), 575–605. doi:10.1111/acfi.13155

Drempetic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. *Journal of Business Ethics*, *167*(2), 333–360. doi:10.1007/s10551-019-04164-1

Elnahas, A. M., & Kim, D. (2017). CEO political ideology and mergers and acquisitions decisions. *Journal of Corporate Finance*, *45*, 162–175. doi:10.1016/j.jcorpfin.2017.04.013

Erhemjamts, O., Li, Q., & Venkateswaran, A. (2013). Corporate social responsibility and its impact on firms' investment policy, organizational structure, and performance. *Journal of Business Ethics*, *118*(2), 395–412. doi:10.1007/s10551-012-1594-x

Erikson, R. S., & Tedin, K. L. (2019). *American public opinion: Its origins, content, and impact* (10th ed.). Routledge.

Fatima, T., & Elbanna, S. (2023). Corporate social responsibility (CSR) implementation: A review and a research agenda towards an integrative framework. *Journal of Business Ethics*, *183*(1), 105–121. doi:10.1007/s10551-022-05047-8

Feix, A., & Wernicke, G. (2024). When is CEO activism conducive to the democratic process? *Journal of Business Ethics*, *190*(4), 755–774. doi:10.1007/s10551-023-05446-5

Ferris, S. P., Houston, R., & Javakhadze, D. (2019). It is a sweetheart of a deal: Political connections and corporate-federal contracting. *Financial Review*, *54*(1), 57–84. doi:10.1111/fire.12181

Finkelstein, S., Hambrick, D. C., & Cannella, B. (2009). *Strategic leadership: Theory and research on executives, top management teams, and boards* (1st ed.). Oxford, England: Oxford University Press.

Francis, B. B., Hasan, I., Sun, X., & Wu, Q. (2016). CEO political preference and corporate tax sheltering. *Journal of Corporate Finance*, *38*, 37–53. doi:10.1016/j.jcorpfin.2016.03.003

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston, MA: Pitman.

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance and Investment*, *5*(4), 210–233. doi:10.1080/20430795.2015.1118917

Frink, D. D., Robinson, R. K., Reithel, B., Arthur, M. M., Ammeter, A. P., Ferris, G. R., . . . Morrisette, H. S. (2003). Gender demography and organization performance: A two-study investigation with convergence. *Group and Organization Management*, *28*(1), 127–147. doi:10.1177/1059601102250025

Garcia, S. (2020). BIPOC: What does it mean? *The New York Times*. Retrieved from https://www.nytimes.com/article/what-is-bipoc.html

Gassmann, P., & Jackson-Moore, W. (2023). The CEO's ESG dilemma. *The Harvard Law School Forum on Corporate Governance*. Retrieved from https://corpgov.law.harvard.edu/2023/01/23/the-ceos-esg-dilemma/

Ghobakhloo, M. (2020). Industry 4.0, digitization, and opportunities for sustainability. *Journal of Cleaner Production*, *252*, 119869. doi:10.1016/j.jclepro.2019.119869

Giddens, A. (2013). *The third way: The renewal of social democracy*. Chichester, UK: John Wiley & Sons.

Gillan, S. L., Koch, A., & Starks, L. T. (2021). Firms and social responsibility: A review of ESG and CSR Research in corporate finance. *Journal of Corporate Finance*, *66*, 101889. doi:10.1016/j.jcorpfin.2021.101889

Glass, C., Cook, A., & Ingersoll, A. R. (2016). Do women leaders promote sustainability? Analyzing the effect of corporate governance composition on environmental

performance. *Business Strategy and the Environment*, *25*(7), 495–511. doi:10.1002/bse.1879

Goodall, M., & Moore, E. (2019). Integrating the sustainable development goals into teaching, research, operations, and service: A case report of Yale University. *Sustainability: The Journal of Record*, *12*(2), 93–96. doi:10.1089/sus.2018.0038

Goodstein, J., Gautam, K., & Boeker, W. (1994). The effects of board size and diversity on strategic change. *Strategic Management Journal*, *15*(3), 241–250. doi:10.1002/smj.4250150305

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology*, *96*(5), 1029–1046. doi:10.1037/a0015141

Green, D. P., Palmquist, B., & Schickler, E. (2004). *Partisan hearts and minds: Political parties and the social identities of voters*. New Haven, CT: Yale University Press.

Greene, W. H. (2019). *Econometric analysis* (8th ed.). London, England: Pearson.

Gupta, A., & Briscoe, F. (2020). Organizational political ideology and corporate openness to social activism. *Administrative Science Quarterly*, *65*(2), 524–563. doi:10.1177/0001839219852954

Gupta, A., Briscoe, F., & Hambrick, D. C. (2017). Red, blue, and purple firms: Organizational political ideology and corporate social responsibility. *Strategic Management Journal*, *38*(5), 1018–1040. doi:10.1002/smj.2550

Gupta, A., Fung, A., & Murphy, C. (2021). Out of character: CEO political ideology, peer influence, and adoption of CSR executive position by Fortune 500 firms. *Strategic Management Journal*, *42*(3), 529–557. doi:10.1002/smj.3240

Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review*, *32*(2), 334–343. doi:10.5465/amr.2007.24345254

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review*, *9*(2), 193–206. doi:10.5465/amr.1984.4277628

Handley, K., & Limão, N. (2022). Trade policy uncertainty. *Annual Review of Economics*, *14*(1), 363–395. doi:10.1146/annurev-economics-021622-020416

He, F., Du, H., & Yu, B. (2022). Corporate ESG performance and manager misconduct: Evidence from China. *International Review of Financial Analysis*, *82*, 102201. doi:10.1016/j.irfa.2022.102201

Hermundsdottir, F., Haneberg, D. H., & Aspelund, A. (2022). Analyzing the impact of COVID-19 on environmental innovations in manufacturing firms. *Technology in Society*, *68*, 101918. doi:10.1016/j.techsoc.2022.101918

Hernández, M. A. (2009). *A is for admission: The insider's guide to getting into the Ivy League and other top colleges*. New York, NY: Grand Central Publishing.

Heubeck, T. (2024a). Looking back to look forward: A systematic review of and research agenda for dynamic managerial capabilities. *Management Review Quarterly*, *74*, 2243–2287. doi:10.1007/s11301-023-00359-z

Heubeck, T. (2024b). Walking on the gender tightrope: Unlocking ESG potential through CEOs' dynamic capabilities and strategic board composition. *Business Strategy and the Environment*, *33*(3), 2020–2039. doi:10.1002/bse.3578

Heubeck, T., & Ahrens, A. (2024). Governing the responsible investment of slack resources in environmental, social, and governance (ESG) performance: How beneficial are CSR committees? *Journal of Business Ethics*, 1–21. doi:10.1007/s10551-024-05798-6

Holzman, M. (2015). The misnomer called 'people of color.' *Dropout Nation*. Retrieved from https://web.archive.org/web/20221226103705/https://dropoutnation.net/2015/09/19/the-misnomer-called-people-of-color/

Huang, D. Z. X. (2021). Environmental, social and governance (ESG) activity and firm performance: A review and consolidation. *Accounting and Finance*, *61*(1), 335–360. doi:10.1111/acfi.12569

Hutton, I., Jiang, D., & Kumar, A. (2014). Corporate policies of Republican managers. *Journal of Financial and Quantitative Analysis*, *49*(5–6), 1279–1310. doi:10.1017/S0022109014000702

Hutton, I., Jiang, D., & Kumar, A. (2015). Political values, culture, and corporate litigation. *Management Science*, *61*(12), 2905–2925. doi:10.1287/mnsc.2014.2106

Ioannou, I., & Serafeim, G. (2023). What drives corporate social performance? The role of nation-level institutions. *Journal of International Business Studies*, *54*(1). doi:10.1057/s41267-022-00579-7

Issa, A. (2023). Shaping a sustainable future: The impact of board gender diversity on clean energy use and the moderating role of environmental, social and governance controversies. *Corporate Social Responsibility and Environmental Management*, 30(6), 2731–2746. doi:10.1002/csr.2512

Issah, W. B., Anwar, M., Clauss, T., & Kraus, S. (2023). Managerial capabilities and strategic renewal in family firms in crisis situations: The moderating role of the founding generation. *Journal of Business Research*, *156*, 113486. doi:10.1016/j.jbusres.2022.113486

Jasinenko, A., Christandl, F., & Meynhardt, T. (2020). Justified by ideology: Why conservatives care less about corporate social irresponsibility. *Journal of Business Research*, *114*, 290–303. doi:10.1016/j.jbusres.2020.04.006

Jeong, N., Kim, N., & Arthurs, J. D. (2021). The CEO's tenure life cycle, corporate social responsibility and the moderating role of the CEO's political orientation. *Journal of Business Research*, *137*, 464–474. doi:10.1016/j.jbusres.2021.08.046

Jiang, F., Zalan, T., Tse, H. H. M., & Shen, J. (2018). Mapping the relationship among political ideology, CSR mindset, and CSR strategy: A contingency perspective applied to Chinese managers. *Journal of Business Ethics*, *147*(2), 419–444. doi:10.1007/s10551-015-2992-7

Johnston, R., Jones, K., & Manley, D. (2018). Confounding and collinearity in regression analysis: A cautionary tale and an alternative procedure, illustrated by studies of British voting behaviour. *Quality and Quantity*, *52*(4), 1957–1976. doi:10.1007/s11135-017-0584-6

Jost, J. T. (2006). The end of the end of ideology. *American Psychologist*, *61*(7), 651–670. doi:10.1037/0003-066X.61.7.651

Jost, J. T., & Amodio, D. M. (2012). Political ideology as motivated social cognition: Behavioral and neuroscientific evidence. *Motivation and Emotion*, *36*(1). doi:10.1007/s11031-011-9260-7

Jost, J. T., Federico, C. M., & Napier, J. L. (2009). Political ideology: Its structure, functions, and elective affinities. *Annual Review of Psychology*, *60*(1), 307–337. doi:10.1146/annurev.psych.60.110707.163600

Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin*, *129*(3), 339–375. doi:10.1037/0033-2909.129.3.339

Jost, J. T., Nosek, B. A., & Gosling, S. D. (2008). Ideology: Its resurgence in social, personality, and political psychology. *Perspectives on Psychological Science*, *3*(2), 126–136. doi:10.1111/j.1745-6916.2008.00070.x

Kao, F. C. (2023). How do ESG activities affect corporate performance? *Managerial and Decision Economics*, *44*(7), 4099–4116. doi:10.1002/mde.3944

Kashmiri, S., & Mahajan, V. (2017). Values that shape marketing decisions: Influence of chief executive officers' political ideologies on innovation propensity, shareholder

value, and risk. *Journal of Marketing Research*, *54*(2), 260–278. doi:10.1509/jmr.14.0110

Kennedy, P. (2008). *A guide to econometrics* (6th ed.). Malden, MA: Wiley-Blackwell.

Khatib, S. F. A. (2024). An assessment of methods to deal with endogeneity in corporate governance and reporting research. *Corporate Governance*. doi:10.1108/CG-12-2023-0507

Kim, E. (2024). Does college prestige matter? Asian CEOs and high-skilled immigrant hiring in the US. *Work, Employment and Society*, *38*(4), 1062–1086. doi:10.1177/09500170231169680

Kim, Y. (2024). Blue goes green: The impact of the chief executive officer and board of directors' political ideology on corporate environmental performance. *Business Strategy and the Environment*, *33*(2), 134–148. doi:10.1002/bse.3481

Koh, P.-S., & Reeb, D. M. (2015). Missing R&D. *Journal of Accounting and Economics*, *60*(1), 73–94. doi:10.1016/j.jacceco.2015.03.004

Le, H., Nguyen, T., & Gregoriou, A. (2024). CEO age and corporate environmental policies. *Journal of International Financial Markets, Institutions and Money*, *97*, 102076. doi:10.1016/j.intfin.2024.102076

Lillard, D., & Gerner, J. (1999). Getting to the Ivy League. *The Journal of Higher Education*, *70*(6), 706–730. doi:10.1080/00221546.1999.11780805

Liu, C., Xu, L., Yang, H., & Zhang, W. (2023). Prosocial CEOs and the cost of debt: Evidence from syndicated loan contracts. *Journal of Corporate Finance*, *78*, 102316. doi:10.1016/j.jcorpfin.2022.102316

Liu, J., Xiong, X., Gao, Y., & Zhang, J. (2023). The impact of institutional investors on ESG: Evidence from China. *Accounting and Finance*, *63*(Suppl. 2), 2801–2826. doi:10.1111/acfi.13011

Liu, Y., Zhang, F., & Zhang, H. (2024a). CEO foreign experience and corporate environmental, social, and governance (ESG) performance. *Business Strategy and the Environment*, *33*(4), 3331–3355. doi:10.1002/bse.3647

Liu, Y., Zhang, H., & Zhang, F. (2024b). The power of CEO growing up in poverty: Enabling better corporate environmental, social, and governance (ESG) performance. *Corporate Social Responsibility and Environmental Management*, *31*(3), 1610–1633. doi:10.1002/csr.2652

LSEG. (2023). *Environmental, social and governance scores from LSEG* (pp. 1–33). Retrieved fromhttps://www.lseg.com/content/dam/data%20analytics/en_us/documents/methodology/lseg-esg-scores%20methodology.pdf?esg=Colgate-Palmolive+Co

MacNeil, I., & Esser, I. (2022). From a financial to an entity model of ESG. *European Business Organization Law Review*, *23*(1), 9–45. doi:10.1007/s40804-021-00234-y

Mahran, K., & Elamer, A. A. (2024). Chief executive officer (CEO) and corporate environmental sustainability: A systematic literature review and avenues for future research. *Business Strategy and the Environment*, *33*(3), 1977–2003. doi:10.1002/bse.3577

Mani, M., Madan, J., Lee, J. H., Lyons, K. W., & Gupta, S. K. (2014). Sustainability characterisation for manufacturing processes. *International Journal of Production Research*, *52*(20), 5895–5912. doi:10.1080/00207543.2014.886788

Marlin, D., & Geiger, S. W. (2015). A reexamination of the organizational slack and innovation relationship. *Journal of Business Research*, *68*(12), 2683–2690. doi:10.1016/j.jbusres.2015.03.047

Marquis, C., & Tilcsik, A. (2013). Imprinting: Toward a multilevel theory. *The Academy of Management Annals*, *7*(1), 195–245. doi:10.1080/19416520.2013.766076

Martelli, J., & Abels, P. (2010). The education of a leader: Educational credentials and other characteristics of chief executive officers. *Journal of Education for Business*, *85*(4), 209–217. doi:10.1080/08832320903449592

Martiny, A., Taglialatela, J., Testa, F., & Iraldo, F. (2024). Determinants of environmental social and governance (ESG) performance: A systematic literature review. *Journal of Cleaner Production*, *456*, 142213. doi:10.1016/j.jclepro.2024.142213

Miller, D., Xu, X., & Mehrotra, V. (2015). When is human capital a valuable resource? The performance effects of Ivy League selection among celebrated CEOs. *Strategic Management Journal*, *36*(6), 930–944. doi:10.1002/smj.2251

Moody, J. (2021). Where the top Fortune 500 CEOs attended college. *US News & World Report*. Retrieved from https://www.usnews.com/education/best-colleges/articles/where-the-top-fortune-500-ceos-attended-college

Moore, W. L. (2008). *Reproducing racism: White space, elite law schools, and racial inequality*. Lanham, MD: Rowman & Littlefield.

Mrchkovska, N., Dolšak, N., & Prakash, A. (2023). Does ESG privilege climate action over social and governance issues? A content analysis of BlackRock CEO Larry Fink's annual letters. *PLOS Sustainability and Transformation*, 2(12), 1–16. doi:10.1371/journal.pstr.0000090

Mullen, A. L. (2009). Elite destinations: Pathways to attending an Ivy League university. *British Journal of Sociology of Education*, *30*(1), 15–27. doi:10.1080/01425690802514292

O'Sullivan, D., Zolotoy, L., Veeraraghavan, M., & Overbeck, J. R. (2024). Are employees safer when the CEO looks greedy? *Journal of Business Ethics*, 1–19. doi:10.1007/s10551-024-05820-x

Pavićević, S., & Keil, T. (2024). The role of military directors in holding the CEO accountable for poor firm performance. *Strategic Management Journal*. 1–25. doi:10.1002/smj.3675

Peng, C., & Chen, Y. (2024). Informal board hierarchy and corporate ESG performance. *Corporate Social Responsibility and Environmental Management*, *31*(5), 4783–4795. doi:10.1002/csr.2834

Potharla, S., Turubilli, S. K., & Shekar, M. C. (2024). The social pillar of ESG: Exploring the link between social sustainability and stock price synchronicity. *Indian Journal of Corporate Governance*, *17*(1), 130–152. doi: 10.1177/09746862241236551

Qadir, S. A., Al-Motairi, H., Tahir, F., & Al-Fagih, L. (2021). Incentives and strategies for financing the renewable energy transition: A review. *Energy Reports*, *7*, 3590–3606. doi:10.1016/j.egyr.2021.06.041

Quigley, T. J., & Hambrick, D. C. (2015). Has the "CEO effect" increased in recent decades? A new explanation for the great rise in America's attention to corporate leaders. *Strategic Management Journal*, *36*(6), 821–830. doi:10.1002/smj.2258

Reimer, M., Van Doorn, S., & Heyden, M. L. M. (2018). Unpacking functional experience complementarities in senior leaders' influences on CSR strategy: A CEO–top management team approach. *Journal of Business Ethics*, *151*(4), 977–995. doi:10.1007/s10551-017-3657-5

Sandberg, H., Alnoor, A., & Tiberius, V. (2023). Environmental, social, and governance ratings and financial performance: Evidence from the European food industry. *Business Strategy and the Environment*, *32*(4), 2471–2489. doi:10.1002/bse.3259

Segal, M. (2023). BlackRock CEO Fink pushes back against 'ideological agenda' claims at Republican debate. *ESG Today*. Retrieved from https://www.esgtoday.com/blackrock-ceo-fink-pushes-back-against-ideological-agenda-claims-at-republican-debate/

Semadeni, M., Chin, M. K., & Krause, R. (2022). Pumping the brakes: Examining the impact of CEO political ideology divergence on firm responses. *Academy of Management Journal*, *65*(2), 516–544. doi:10.5465/amj.2019.1131

Seow, R. Y. C. (2024). Environmental, social, and governance reporting in family firms: The critical role of CEO attributes. *Business Strategy and the Environment*. 1–18. doi:10.1002/bse.3984

Shao, S., Hu, Z., Cao, J., Yang, L., & Guan, D. (2020). Environmental regulation and enterprise innovation: A review. *Business Strategy and the Environment*, *29*(3), 1465–1478. doi:10.1002/bse.2446

Solakoglu, M. N. (2013). The role of gender diversity on firm performance: A regression quantile approach. *Applied Economics Letters*, *20*(17), 1562–1566. doi:10.1080/13504851.2013.829184

Sorkin, A. R., Giang, V., Gandel, S., Hirsch, L., Livni, E., Gross, J., & Schaverien, A. (2022). Elon Musk's next target. *The New York Times*. Retrieved from https://www.nytimes.com/2022/05/19/business/dealbook/elon-musk-tesla-esg.html

Swigart, K. L., Anantharaman, A., Williamson, J. A., & Grandey, A. A. (2020). Working while liberal/conservative: A review of political ideology in organizations. *Journal of Management*, *46*(6), 1063–1091. doi:10.1177/0149206320909419

Taglialatela, J., Pirazzi Maffiola, K., Barontini, R., & Testa, F. (2023). Board of directors' characteristics and environmental SDGs adoption: An international study. *Corporate Social Responsibility and Environmental Management*, *30*(5), 2490–2506. doi:10.1002/csr.2499

Trahan, R. T., & Jantz, B. (2023). What is ESG? Rethinking the "E" pillar. *Business Strategy and the Environment*, *32*(7), 4382–4391. doi:10.1002/bse.3371

Ullah, S., Zaefarian, G., & Ullah, F. (2021). How to use instrumental variables in addressing endogeneity? A step-by-step procedure for non-specialists. *Industrial Marketing Management*, *96*, A1–A6. doi:10.1016/j.indmarman.2020.03.006

Unsal, O., Hassan, M. K., & Zirek, D. (2016). Corporate lobbying, CEO political ideology and firm performance. *Journal of Corporate Finance*, *38*, 126–149. doi:10.1016/j.jcorpfin.2016.04.001

Urquhart, A., & Zhang, H. (2022). PhD CEOs and firm performance. *European Financial Management*, *28*(2), 433–481. doi:10.1111/eufm.12316

Vaidyanathan, B., Hill, J. P., & Smith, C. (2011). Religion and charitable financial giving to religious and secular causes: Does political ideology matter? *Journal for the Scientific Study of Religion*, *50*(3), 450–469. doi:10.1111/j.1468-5906.2011.01584.x

Velte, P. (2016). Women on management board and ESG performance. *Journal of Global Responsibility*, *7*(1), 98–109. doi:10.1108/JGR-01-2016-0001

Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility*, *8*(2), 169–178. doi:10.1108/JGR-11-2016-0029

Wally, S., & Baum, J. R. (1994). Personal and structural determinants of the pace of strategic decision making. *Academy of Management Journal*, *37*(4), 932–956. doi:10.5465/256605

Wang, Y., Lin, Y., Fu, X., & Chen, S. (2023). Institutional ownership heterogeneity and ESG performance: Evidence from China. *Finance Research Letters*, *51*, 103448. doi:10.1016/j.frl.2022.103448

Weng, D. H., Chuang, Y.-T., Zhang, C., & Church, R. (2023). CEO political liberalism, stakeholders, and firms' support for LGBT employees. *The Leadership Quarterly*, *34*(3), 101645. doi:10.1016/j.leaqua.2022.101645

Weng, D. H., & Yang, H. (2024). Is red or blue more likely to narrow the gap? The effect of CEO political ideology on CEO-employee pay disparity. *Journal of Management Studies*, *61*(3), 1074–1109. doi:10.1111/joms.12917

Wernicke, G., Sajko, M., & Boone, C. (2022). How much influence do CEOs have on company actions and outcomes? The example of corporate social responsibility. *Academy of Management Discoveries*, *8*(1), 36–55. doi:10.5465/amd.2019.0074

Whitler, K. A. (2019). A new study on Fortune 100 CEOs: The (surprising) undergraduate institutions they attended. *Forbes*. Retrieved from https://www.forbes.com/sites/kimberlywhitler/2019/09/07/a-new-study-on-fortune-100-ceos-what-undergraduate-institutions-did-they-attend/

Winston, A. (2023). Why business leaders must resist the anti-ESG movement. *Harvard Business Review*. Retrieved from https://hbr.org/2023/04/why-business-leaders-must-resist-the-anti-esg-movement.

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, *105*(3), 581–606. doi:10.1016/j.jfineco.2012.03.005

Wolman, J., Cooper, C., & Prang, A. (2024). Anti-ESG takes a leap across the pond. *Il Politico*. Retrieved from https://www.politico.com/newsletters/the-long-game/2023/10/31/brits-barnstormed-by-esg-politics-mate-00124453.

Wooldridge, J. M. (2002). *Econometric analysis of cross section and panel data*. Cambridge, MA: MIT Press.

Yale University. (2016). *Yale Sustainability Plan 2025* (pp. 1–28). Retrieved from https://sustainability.yale.edu/sites/default/files/sustainability_plan_2025.pdf

Yuan, X., Li, Z., Xu, J., & Shang, L. (2022). ESG disclosure and corporate financial irregularities – Evidence from Chinese listed firms. *Journal of Cleaner Production*, *332*, 129992. doi:10.1016/j.jclepro.2021.129992

Zizka, L., McGunagle, D. M., & Clark, P. J. (2021). Sustainability in science, technology, engineering and mathematics (STEM) programs: Authentic engagement through a community-based approach. *Journal of Cleaner Production*, *279*, 123715. doi:10.1016/j.jclepro.2020.123715

Chapter 5 Research Paper 3: Top Management as an Enabler of Firms' Twin Transformation

Ahrens, A., & Heubeck, T. (2025). Top Management as an Enabler of Firms' Sustainable and Digital Transformation: A Literature Review and Research Agenda for Twin Transformation. *International Journal of Innovation Management, 29*(05n06), 1-36. https://doi.org/10.1142/S1363919625400067

Summary

Firms today are confronted with unprecedented complexity arising from both societal and competitive pressures, requiring them to advance sustainability and digitalization simultaneously. This dual pursuit, twin transformation, highlights the synergies that emerge from aligning environmental and social initiatives with digital technologies. Although previous research has thoroughly examined the role of top management in advancing sustainability and digitalization independently, a holistic understanding of how they enable and coordinate these transformations in an integrated manner remains limited.

To address this gap, this study undertakes a systematic literature review to consolidate current insights and outline directions for future research. Drawing on 48 peer-reviewed articles, the review identifies three overarching categories of enablers—human capital, leadership attributes, and governance mechanisms—that shape the ability of top managers to foster twin transformation. These enablers operate across multiple layers of corporate leadership, including executives, boards of directors, and ownership structures, underscoring the multi-level nature of strategic decision-making in this domain.

The findings underscore the pivotal role of top management in steering the complexities of twin transformation and contribute to advancing the scholarly discourse in this emerging field. At the same time, the review uncovers significant gaps in existing literature. It formulates a set of research questions to guide future investigations into twin transformation and the role of top management. This study advances the literature on twin transformation. It offers practical implications for managers striving to integrate digital and sustainability strategies to strengthen organizational competitiveness while simultaneously addressing societal challenges.

Keywords: twin transformation, sustainability, digitalization, top management, governance, systematic literature review

Chapter 6 Research Paper 4: Influence of CEO founder status on ESG performance

Heubeck, T., & Ahrens, A. (2025). Directing the Visionary: Governance Mechanisms and Corporate ESG Performance under Founder-CEO Leadership. *Currently in the review process at a scientific journal.*

Abstract

Drawing on upper echelons theory, this study examines the effect of CEO founder status on firms' environmental, social, and governance (ESG) performance. It analyzes how board-level governance mechanisms moderate this relationship. An analysis of panel data from U.S. Nasdaq 100 companies reveals that, on average, founder CEOs exert no significant effect on overall ESG performance. The findings, however, point to necessary contingencies. The presence of a dedicated CSR committee enables founder CEOs to enhance environmental performance, whereas its absence is linked to weaker outcomes in this dimension. Similarly, greater board gender diversity amplifies the positive effect of founder leadership on governance-related ESG performance, while their influence on social performance remains limited. Additional evidence suggests that achieving a critical mass of female directors further reinforces the ESG contributions of founder CEOs. These results underscore the context-dependent nature of founder leadership in sustainability and demonstrate the pivotal role of governance structures in fostering responsible corporate practices.

Keywords: Upper echelons theory, Board composition, Corporate governance, ESG performance

Chapter 7 Research Paper 5: The Missing Link in SMEs' Digital Transformation

Ahrens, A., Heubeck, T., Held, P., & Meckl, R. (2025). The Missing Link in SMEs' Digital Transformation: How Business Model Innovation Bridges Digital Technology Adoption and Competitive Advantage. *Working paper.*

Abstract

This study explores how digital technology adoption (DTA) influences cognitive business model evaluation and how it contributes to generating competitive advantage in German small and medium-sized enterprises (SMEs). Grounded in dynamic managerial capabilities theory, we examine how managers cognitively assess business model transformation in response to DTA. We introduce cognitive business model innovation as the mediator between DTA and SMEs' competitive advantage while accounting for the influence of a technologically dynamic environment. The research employs survey data from German manufacturing SMEs and utilizes structural equation modeling for data analysis. Our findings show that DTA positively affects all three dimensions of business model evaluation—value offering, value architecture, and value capture. However, only the assessment of value architecture significantly enhances the pathway from technology adoption to competitive advantage. Furthermore, we find that technological dynamics negatively moderate the relationship between DTA and cognitive business model evaluation, particularly in the dimensions of value offering and value architecture. This suggests that rapid technological changes create uncertainty, which can hinder evaluating and adapting these aspects of the business model, ultimately limiting the effectiveness of technology adoption in achieving competitive advantage. This research provides new insights into how adopting digital technologies contributes to competitive advantage in SMEs. We highlight the importance of adopting digital technologies and restructuring business processes, partnerships, and value delivery systems to fully leverage them to enhance competitive advantage.

Keywords: Digital Technology Adoption, Managerial Cognition, Business Model Innovation, Competitive Advantage, Technological Dynamics, SMEs, Structural Equation Modeling.

Chapter 8 Conclusion

8.1 Synthesis of Key Findings across Papers

This study examines the influence of top management and governance mechanisms on firms' sustainability and digital transformation and applies these insights to the twin transformation. Three research questions were formulated in the introduction to guide the analysis. These questions were addressed in the five research papers presented in Chapters 3 to 7. The present chapter synthesizes the key findings of these papers to answer the three research questions and to highlight their theoretical and practical implications.

RQ 1: What is the relationship between individual managerial characteristics and the digital and sustainability transformations within firms, and how do these characteristics shape the course of these transformations?

Research Papers 2 and 4 address the question of which top management characteristics influence the sustainability transformation of firms. Both papers examine different managerial attributes affecting firms' ESG performance. Research Paper 2 investigates the role of CEO political ideology and the moderating effect of Ivy League education. Using data on political donations made by CEOs of U.S. firms, the study finds that political ideology significantly shapes ESG performance: liberal CEOs are associated with higher ESG outcomes, particularly in the social and governance domains. Contrary to the initial hypothesis, Ivy League education does not moderate this relationship. Instead, the findings reveal a direct adverse effect of elite education on overall ESG performance. Research Paper 2 thus provides evidence for the substantial impact of political orientation and educational background on ESG outcomes, thereby supporting the arguments of upper echelons theory and behavioral consistency theory.

Research Paper 4 examines the impact of CEO founder status on the ESG performance of U.S. Nasdaq 100 firms. The study builds on the assumption that founder CEOs exhibit distinct characteristics compared to professional or non-founder CEOs, such as stronger long-term orientation and a heightened sense of responsibility (Fahlenbrach, 2009; J. Kim & Koo, 2018). It further hypothesizes that the influence of founder CEOs differs across ESG dimensions, suggesting that they exert a more substantial positive effect on the governance pillar than on environmental or social performance. However, the analysis does not provide evidence of the founder status's direct effect on overall ESG performance or any of the three pillars. The findings change when governance mechanisms are considered, highlighting the significant role of governance structures in shaping sustainability-related decision-making within firms.

Research Paper 5 addresses firms' digital transformation and investigates managerial cognition as a mediating factor between digital technology adoption and competitive advantage. Drawing on a survey of SMEs in the manufacturing sector, the study measured cognitive business model innovation by assessing owners' and managers' attitudes toward integrating digital technologies into their business models. The results demonstrate that a positive managerial attitude toward embedding novel digital technologies and reconfiguring business model architecture mediates the relationship between digital technology adoption and competitive advantage. This study, therefore, provides evidence that managerial cognition plays a critical role in enabling SMEs to generate competitive advantage when adopting novel technologies such as big data, AI, or IoT. Hence, managerial attitudes toward digital transformation substantially influence the extent to which such organizational changes succeed.

The findings demonstrate that individual managerial characteristics significantly shape firms' sustainability and digital transformation. The studies show that the elite education of CEOs can be detrimental to the sustainability transformation of firms. The political orientation of CEOs also plays a significant role, as liberal CEOs tend to be more supportive of sustainability initiatives. In addition, a positive attitude among SME managers toward using digital technologies to reconfigure their business models can enhance firms' digital transformation. Managerial cognition also determines the course and success of digital transformation, as managers' attitudes mediate whether adopting novel technologies translates into competitive advantage.

RQ 2: In what ways do governance mechanisms influence the digital and sustainability transformations within firms?

This question is examined by Research Papers 1 and 4 in the context of sustainability transformation. Research Paper 1 investigates the role of CSR committees in shaping the relationship between slack resources and ESG performance in non-financial Nasdaq-100 firms. The analysis identifies an inverted U-shaped relationship, indicating that while slack resources initially enhance ESG performance, their effect becomes detrimental beyond a certain threshold. Although the presence of a CSR committee is generally associated with improved ESG outcomes, it does not moderate the relationship between slack resources and ESG performance. These findings point to a more complex interaction between governance mechanisms and sustainability outcomes, thereby contributing to the ongoing debate on whether CSR committees serve merely a symbolic function or whether they exert substantive influence on firms' ESG performance (Chams & García-Blandón, 2019; Rodrigue et al., 2013).

Research Paper 4 investigates the moderating effect of two governance mechanisms on the ESG performance of firms. The study first shows that CEO founder status alone does not significantly affect ESG performance. However, the presence of a CSR committee and gender diversity on the board of directors significantly moderate the relationship between founder status and specific ESG dimensions. The results indicate that when a CSR committee is present, founder status has a positive effect on the environmental performance of firms. Furthermore, board gender diversity enhances the positive effect of founder status on governance performance, with the study also highlighting that a critical mass of women is required to generate this positive influence.

To answer the research question, the findings provide clear evidence of the significant influence of governance mechanisms on the sustainability transformation of firms. In particular, the presence of CSR committees and board gender diversity contribute to improvements across different ESG dimensions. These results underscore that governance mechanisms are critical for advancing firms' sustainability performance and suggest that, in their absence, the sustainability transformation may not be achievable.

RQ 3: Can top management drive the twin transformation of firms?

This research question is primarily addressed in Research Paper 3, which presents a literature review on the enabling role of top management in the twin transformation of firms. However, this question is also reflected across all research papers included in this thesis. Research Paper 3 analyzes 48 articles to identify enablers of top management in driving twin transformation. The findings reveal three categories of enablers—human capital, leadership characteristics, and governance mechanisms—across different top management levels. Moreover, not only CEOs but also top executives, boards of directors, and ownership structures emerge as critical actors influencing firm transformations.

In summary, the findings across all research papers demonstrate that top management—including CEOs, founders, owners, board members, and managers—plays a crucial role in shaping firms' sustainability and digital transformation. Collectively, the studies conclude that individual managerial characteristics exert a significant influence on decision-making in both transformation processes, while governance mechanisms provide essential support. This thesis, therefore, argues that since managers and governance mechanisms have a decisive impact on sustainability and digital transformation independently, these insights are likewise applicable to the twin transformation, which encompasses the dual pursuit of both.

8.2 Contributions to Theory and Strategic Management

This thesis makes several contributions to theory and strategic management research. First, it contributes to and advances upper echelons theory. The findings demonstrate that managerial characteristics, such as CEO founder status, political orientation, and Ivy League education, significantly influence corporate decision-making (Research Papers 2 and 4). These results are consistent with the central proposition of upper echelons theory (Hambrick, 2007; Hambrick & Mason, 1984), while also demonstrating that political orientation and elite education shape managers' norms and beliefs, thereby influencing corporate outcomes (Cannella & Holcomb, 2005). However, the findings also provide evidence for the context-dependence of these effects. While CEO founder status alone did not significantly affect ESG performance, its influence emerged when governance mechanisms were in place, enabling an effect on distinct ESG pillars. The findings, therefore, advance upper echelons theory by showing that the influence of top managers' characteristics on sustainability is contingent upon the presence of specific governance mechanisms (Research Paper 4).

Second, the findings further demonstrate that governance mechanisms exert varying effects across the different ESG pillars (Research Raper 4). These findings extend ESG research by underscoring the importance of distinguishing between individual ESG dimensions, as the influence of managerial characteristics may vary across them (Devos et al., 2024). To ensure that appropriate implications are derived from sustainability research, the distinct ESG pillars should be examined separately.

Third, this thesis also supports the agency view of the firm, as the findings highlight the need for governance mechanisms to align top management objectives with those of stakeholders (Research Papers 1 and 4). The results indicate that top management benefits both from board monitoring and from the board's advisory role in providing knowledge on sustainability initiatives, thereby facilitating the fulfillment of stakeholder demands for more responsible corporate behavior (Berrone & Gomez-Mejia, 2009; Michelon & Parbonetti, 2012). This study thus contributes to the ongoing debate on the effectiveness of governance mechanisms, such as CSR committees, by providing evidence for their beneficial role in enhancing firms' ESG performance.

Fourth, this thesis contributes to the emerging literature on twin transformation, where various calls for further research exist (e.g., Lockl et al., 2025; Schallmo et al., 2025). The findings demonstrate that many studies have already examined digitalization and sustainability jointly and highlight the significant influence of top management on this dual pursuit (Research Paper 3). This underscores that the phenomenon of twin transformation is both present and relevant

in the management literature. This thesis advances scholarly work in this field by formulating future research questions and identifying gaps, and supports efforts to address broader societal challenges.

Fifth, the study also contributes to the literature on dynamic managerial capabilities as the findings underscore the relevance of this theory for research on digital technology adoption. It emphasizes the importance of managerial cognition for gaining a competitive advantage in an environment with high technological dynamism (Acciarini et al., 2021). By examining managerial cognition as a central factor shaping business model innovation and competitive advantage, this study highlights its critical role in driving digital transformation and explaining how firms adopt and integrate novel technologies (van Zeebroeck et al., 2021).

8.3 Practical Implications for Firms and Policymakers

The findings of this thesis yield significant practical implications. First, they provide guidance for firms and HR departments in CEO succession. In particular, the findings demonstrate that political ideology and educational background influence the sustainability performance of firms (Research Paper 2). Accordingly, if firms aim to enhance their ESG performance, the findings suggest that liberal CEOs and those without an Ivy League education may represent the more suitable choice.

Second, the findings of this thesis provide evidence that governance structures are essential for enhancing firms' sustainability performance. This thesis reveals that the presence of a CSR committee and a critical mass of women on boards of directors positively influence governance and environmental outcomes (Research Paper 4). These findings further suggest the importance of ensuring that boards of directors are equipped to effectively fulfill their monitoring and advisory roles in order to support sustainability-related decision-making.

Third, the findings provide valuable implications for managers of SMEs seeking to adopt novel technologies in dynamic environments. It becomes evident that digital technologies must be deeply embedded in the business model in order to generate sustainable competitive advantage (Research Paper 5). Moreover, the results show that managerial attitudes toward the benefits of digital technologies—particularly regarding the creation of new partnerships and the reconfiguration of business model architecture—positively affect the success of technology adoption. Accordingly, maintaining an open mindset toward digital technologies and considering their thorough integration into the business model can substantially enhance competitive advantage.

Fourth, the findings of all research papers prove that sustainability and digitalization should be deeply integrated into the corporate strategy. If a business wants to enhance its sustainability performance, it has to incorporate this goal into its top management and governance structure by appointing CEOs who have the right characteristics to ensure they follow the objective and install governance mechanisms that will help and guide the manager in the pursuit of this endeavor. The same thing applies to the digital transformation of firms. Since managers' attitudes towards the benefits of novel technology significantly enhance competitive advantage, it shows that the deep integration of digital technologies into business models helps with the competitive advantage and, therefore, how successful the digital transformation is (Research Paper 5).

Fifth, the literature review findings imply that achieving twin transformation requires the strong commitment of top management to drive the dual pursuit of digital and sustainability transformations (Research Paper 3). At the same time, the engagement of all managerial levels is necessary to ensure its successful realization. Consequently, sustainability and digitalization must be embedded not only in formal regulations but also within leadership structures, governance, and corporate strategy to accomplish the twin transformation effectively.

8.4 Limitations and Avenues for Future Research

This thesis and the research papers it comprises are subject to certain limitations that must be acknowledged. This section, therefore, outlines the main limitations and provides guidance for future research that may build upon them.

The first limitation concerns the sample selection and restricted country scope. Research Papers 1 and 2, which focus on the sustainability performance of firms, only considered large U.S. firms—Nasdaq-100 companies and manufacturing firms from the S&P 900. This sample was chosen due to data availability. At the same time, the focus on U.S. firms in particular in Research Paper 2 was motivated by the country's political landscape, which allowed for a clear distinction between two dominant political orientations (liberal and conservative), thereby facilitating the analysis of political ideology in relation to ESG performance. From this limitation, two implications for future research emerge: (1) studies should be extended to smaller firms, such as SMEs, to ensure the applicability of the findings to firms with different resources and capabilities; and (2) research should be conducted in other countries with varying cultural contexts and political systems to validate the findings of Research Papers 1 and 2.

Second, this thesis faces limitations regarding governance mechanisms and highlights the need for further research on CSR committees and their contingencies. Research Papers 2 and 4, which examine the influence of governance mechanisms such as the presence of CSR committees and board gender diversity, should take into account that the effectiveness of these mechanisms may vary depending on the specific tasks assigned to them and the degree of power and authority they are granted. Research Papers 2 and 4 only considered the mere presence of a CSR committee without accounting for the power delegated to it or the specific tasks it performs. Consequently, further research is needed to fully understand the potential benefits of CSR committees and provide more nuanced recommendations for managers regarding board composition and the appointment of committee members. Moreover, it is likely that governance mechanisms beyond CSR committees and board gender diversity influence top management decision-making. Future research should therefore also examine additional mechanisms, such as the educational backgrounds and experiences of board members, as well as the design of incentive structures that could encourage founder-CEOs to strengthen firms' sustainability performance or to allocate slack resources toward ESG initiatives.

Third, this thesis also faces limitations concerning the research conducted on digital transformation. Research Paper 5 was conducted using a relatively small sample of 55 manufacturing SMEs in Germany, Switzerland, and Austria. Future studies should replicate the analysis with larger samples, across firms of different sizes, or in other countries to validate the findings in varying cultural contexts. A further limitation of Research Paper 5 lies in the potential reciprocal relationship between cognitive evaluations and technology adoption. The study cannot rule out reverse causality, a common concern in questionnaire-based research. Future research could therefore apply alternative methodologies, such as qualitative interviews, to strengthen the validity of the findings.

Fourth, Research Paper 5 focuses exclusively on SMACIT technologies (Sebastian et al., 2017) when analyzing the digital transformation of firms and their potential to generate competitive advantage for SMEs. However, additional technologies have since emerged that fundamentally reshape industries and business models. In particular, generative AI has become a rapidly evolving topic of interest for both scholars and practitioners, as it is transforming how businesses conduct their everyday activities (Ghobakhloo et al., 2024; Held & Heubeck, 2025). Future research should therefore examine the relationship between generative AI and sustainability, exploring how AI can enhance firms' sustainability performance and, in turn, advance their digital transformation. Research Paper 5 already highlights that firms are continuously confronted with newly evolving technologies, and future studies could provide

further guidance for managers seeking to implement technologies such as generative AI or robotics to support the twin transformation of firms.

Fifth, this thesis includes only one study (Research Paper 3) in the domain of twin transformation, while Research Papers 1, 2, and 4 focus on sustainability and Research Paper 5 on digital transformation. Consequently, further studies are needed that explicitly address the dual pursuit of sustainability and digital transformation, examining in particular how governance mechanisms and top management characteristics influence the twin transformation of firms. Future studies on twin transformation and top management could employ qualitative interviews or case studies to gain deeper insight into how top management shapes this fundamental organizational change within firms.

Future research could also delve deeper into the governance mechanisms that influence firms' digital transformation. Investigating whether the governance mechanisms that drive or enable sustainability transformation also play a role in digital transformation would be valuable. Additionally, it would be interesting to explore whether a CTO and a CSR committee can effectively collaborate to advance twin transformation, or whether it is more effective to assign responsibility for both transformations to a single member of the top management team.

8.5 Concluding Reflections

Businesses have become key actors in addressing societal challenges, requiring the integration of sustainability into their overall corporate strategies. At the same time, digital transformation has emerged as a central objective for maintaining and enhancing competitiveness. The simultaneous pursuit of these two objectives—commonly referred to as twin transformation—has therefore become a critical concern for top management. While this dual pursuit offers the potential for significant synergies, it also entails considerable challenges, underscoring the need for scholarly inquiry to provide guidance for executives engaged in this transformative endeavor.

This thesis advances the understanding of twin transformation by analyzing the influence of top management and governance mechanisms on firms' sustainability and digital transformation efforts. The findings contribute to sustainability and strategic management research by identifying managerial characteristics and governance structures that significantly shape firms' ESG performance. As societal demands for more environmentally and socially responsible corporate behavior intensify, this thesis identifies key characteristics of top managers that drive firms' sustainability efforts. Moreover, with emerging digital technologies increasingly capable

of supporting sustainability objectives, this thesis offers managerial guidance that is essential for ensuring the effective integration of novel technologies into business models, thereby generating competitive advantage.

This thesis provides valuable avenues for future research aimed at further exploring how synergies between sustainability and digital transformation can be realized and how top management can successfully orchestrate this dual pursuit.

8.6 References

Acciarini, C., Brunetta, F., & Boccardelli, P. (2021). Cognitive biases and decision-making strategies in times of change: a systematic literature review. *Management Decision*, *59*(3), 638–652. https://doi.org/10.1108/MD-07-2019-1006

Berrone, P., & Gomez-Mejia, L. R. (2009). Environmental performance and executive compensation: An integrated agency-institutional perspective. *Academy of Management Journal*, *52*(1), 103–126. https://doi.org/10.5465/amj.2009.36461950

Cannella, A. A., & Holcomb, T. R. (2005). A multi-level analysis of the upper-echelons model. In *Multi-level issues in strategy and methods* (pp. 195–237). Emerald Group Publishing Limited.

Chams, N., & García-Blandón, J. (2019). Sustainable or not sustainable? The role of the board of directors. *Journal of Cleaner Production*, *226*, 1067–1081. https://doi.org/10.1016/j.jclepro.2019.04.118

Devos, E., Feng, Z., Thompson, L., & Wei, Z. (2024). Founder CEOs and ESG. *International Review of Economics & Finance*, *94*, Article 103407. https://doi.org/10.1016/j.iref.2024.103407

Fahlenbrach, R. (2009). Founder-CEOs, Investment Decisions, and Stock Market Performance. *Journal of Financial and Quantitative Analysis*, *44*(2), 439–466. https://doi.org/10.1017/S0022109009090139

Ghobakhloo, M., Fathi, M., Iranmanesh, M., Vilkas, M., Grybauskas, A., & Amran, A. (2024). Generative artificial intelligence in manufacturing: opportunities for actualizing Industry 5.0 sustainability goals. *Journal of Manufacturing Technology Management*, *35*(9), 94–121. https://doi.org/10.1108/JMTM-12-2023-0530

Hambrick, D. C. (2007). Upper Echelons Theory: An Update. *Academy of Management Review*, *32*(2), 334–343. https://doi.org/10.5465/amr.2007.24345254

Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review*, *9*(2), 193–206. https://doi.org/10.5465/amr.1984.4277628

Held, P., & Heubeck, T. (2025). GenAI and employee innovativeness: How employees' sensing capabilities and the capabilities to use and evaluate GenAI shape their innovative work behavior. *Digital Business*, 100149. https://doi.org/10.1016/j.digbus.2025.100149

Kim, J., & Koo, K. (2018). Are founder CEO s effective innovators? *Asia-Pacific Journal of Financial Studies*, *47*(3), 426–448. https://doi.org/10.1111/ajfs.12217

Lockl, A., Heim, L., & Oberländer, A. M. (2025). Better together—the interplay between digital transformation and sustainability transformation to realise twin transformation. *International Journal of Innovation Management*, *29*(5), 2540001. https://doi.org/10.1142/S1363919625400018

Michelon, G., & Parbonetti, A. (2012). The effect of corporate governance on sustainability disclosure. *Journal of Management & Governance*, *16*(3), 477–509. https://doi.org/10.1007/s10997-010-9160-3

Rodrigue, M., Magnan, M., & Cho, C. H. (2013). Is environmental governance substantive or symbolic? An empirical investigation. *Journal of Business Ethics*, *114*(1), 107–129. https://doi.org/10.1007/s10551-012-1331-5

Schallmo, D., Kolb, J., Schuster, T., Athanassopoulou, N., & Sepetis, A. (2025). Twin Transformation: Understanding The Nature And Combination Of Digital And Sustainability Transformation, *29*(5). https://doi.org/10.1142/S1363919625010017

Sebastian, I. M., Ross, J. W., Beath, C., Mocker, M., Moloney, K. G., & Fonstad, N. O. (2017). How big old companies navigate digital transformation. *MIS Quarterly Executive*, *16*(3), 197–213.

van Zeebroeck, N., Kretschmer, T., & Bughin, J. (2021). Digital “is” strategy: The role of digital technology adoption in strategy renewal. *IEEE Transactions on Engineering Management*, *70*(9), 3183–3197. https://doi.org/10.1109/TEM.2021.307934