

SUSTAINABILITY ACCOUNTING ADOPTION: THE IMPACT OF ESG DIMENSIONS ON MANAGERIAL DECISION-MAKING

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Article History

Received: 18 June 2026

Accepted: 18 July 2026

Published: 01 August 2026

Abstract

Contemporary developments in corporate management reveal an increasing emphasis on sustainability manifested through Environmental, Social, and Governance (ESG) initiatives and digitalization as key determinants of financial performance and firm value. This literature review aims to analyze the complex and dynamic interplay between corporate sustainability and digital disruption, as well as their impact on corporate financial performance and firm value. The analysis is based on a review of studies within the accounting and finance domains that predominantly employ quantitative approaches. Common methodologies found in the reviewed research include longitudinal panel econometric models and Partial Least Squares Structural Equation Modeling (PLS-SEM). Data were sourced from secondary datasets, such as global financial databases and corporate annual reports. Key variables were measured using both accounting perspectives (Return on Assets) and market perspectives (Market Value to Book Value) to assess financial performance and firm value. The findings support a positive and significant relationship between sustainability performance and financial performance, as measured by both ROA and MV/BV. High-quality environmental accounting disclosure is significantly associated with a lower cost of equity, indicating that investors prioritize sustainability factors in their investment decisions. Digital disruption and financial technology (FinTech) act as transformative forces. FinTech exerts a strong, positive, and significant direct impact on the adoption of sustainable finance practices and enhances the integration of ESG into financial reporting (FRESGI). Digital transformation was found to positively moderate the relationship between financial performance (ROA) and business sustainability, thereby reinforcing the positive effect. However, cross-sector interactions involving corporate sustainability and public sector financial or technological agendas can exert a negative moderating effect on ESG integration, suggesting structural friction or a misalignment of priorities.

Keywords: Sustainability, Digitalization, ESG, Financial Performance, Firm Value (MV/BV), FinTech, Greenwashing, GCG

A. INTRODUCTION

Dynamic global economic developments, coupled with increasingly urgent climate and social challenges, have positioned sustainability as a central element of contemporary business

strategy. Sustainability encompasses a continuous process aimed at achieving improvements in environmental, economic, and social dimensions, in line with the United Nations Sustainable Development Goals (SDGs). Within this context, Sustainability Accounting has emerged as a significant response within the accounting discipline.

Sustainability Accounting is defined as a modern accounting and information management technique that seeks to generate and provide high-quality information to support organizations in their transition toward sustainability (Schaltegger et al., 2006). Fundamentally, Sustainability Accounting integrates Economic, Social, Environmental, and Governance (ESG) factors into a company's accounting system, requiring organizations to address governance, social, and environmental issues through the disclosure of non-financial information (Ozili, 2021). The implementation of Sustainability Accounting enables companies to measure sustainability performance, enhance organizational reputation, and provide a comprehensive framework for assessing the impact of organizational activities on society and the environment.

In today's business environment, characterized by environmental uncertainty and intense competition, accounting information plays a crucial role in supporting strategic decision-making with long-term implications. Managers and decision-makers require accurate and timely information, including future-oriented, non-financial, and externally focused (broad-scope) information (Chenhall & Morris, 1986; Pires, Alves, & Fernandes, 2023). Sustainability Accounting specifically assists managers in making well-informed decisions by balancing financial success with social and environmental responsibilities. Effective managerial decisions—whether at the operational, tactical, or strategic level—depend heavily on information generated by accounting systems.

Although the importance of Sustainability Accounting is widely recognized, empirical evidence reveals considerable variation in the influence of individual ESG dimensions on managerial decision-making. In the context of industrial companies, for example, the Economic and Social dimensions of sustainability have been found to exert a positive and significant influence on decision-making (Musa, 2024). However, the Environmental dimension often plays a less prominent role in managerial decision-making processes within industrial firms (Musa, 2024). This disparity suggests that the adoption of Sustainability Accounting has not yet been fully integrated in a holistic manner, largely due to the absence of adequate regulatory frameworks and limited managerial awareness of the importance of environmental reporting. Furthermore, effective managerial decision-making requires organizations to adapt both traditional and contemporary Management Accounting Practices (MAPs) to contingency factors such as environmental uncertainty (Abdel & Luther, 2008; Otley, 2016; Oyewo, 2022).

Accordingly, research on the adoption of Sustainability Accounting and an in-depth examination of the specific effects of each ESG dimension (Economic, Social, and Environmental) on the quality and effectiveness of managerial decision-making are highly relevant. This study aims to bridge the existing gap in understanding how sustainability-oriented accounting practices can be implemented effectively, particularly in supporting adaptive and strategic managerial decision-making amid an increasingly volatile economic environment.

B. LITERATURE REVIEW

Adoption of Sustainability Accounting: The Impact of ESG Dimensions on Managerial Decision-Making

Conceptualization of Sustainability Accounting

Sustainability Accounting is defined as an accounting practice that encompasses the identification, measurement, and reporting of an organization's internal and external sustainability performance. Fundamentally, Sustainability Accounting integrates economic, environmental, and social factors into the accounting system. The evolution of accounting has increasingly focused on how corporate operations affect society and the environment. Consequently, Sustainability Accounting is regarded as an integral component of organizational strategy aimed at measuring business performance and reporting sustainability outcomes to enhance overall organizational performance.

The primary objective of Sustainability Accounting is to provide non-financial information, compelling companies to address governance, social, and environmental issues. It also seeks to meet stakeholder expectations, manage risks associated with sustainability issues, and create long-term business value. By providing comprehensive analyses of the financial implications of sustainability initiatives, accountants facilitate managerial decision-making that balances financial success with social and environmental responsibility.

The ESG Framework and Its Relationship with Accounting

The concept of sustainability is rooted in continuous efforts to achieve improvements in the environmental, economic, and social dimensions (the three pillars of ESG), while meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. The adoption of Strategic Management Accounting and Decentralization Technologies has become increasingly important within the context of ESG accounting and reporting. Companies that adopt ESG practices are considered more likely to improve organizational performance while contributing to climate change mitigation.

Sustainability Accounting and Managerial Decision-Making

Accounting information plays a fundamental role in fulfilling managerial information needs. Management cannot effectively undertake planning without making decisions, and sound decisions must be based on accurate, reliable, and high-quality information that is evaluated and applied logically.

In today's business environment, characterized by environmental uncertainty arising from intense competition and increasing demands for social and environmental responsibility, management accounting information has become increasingly important. The usefulness of accounting information that incorporates non-financial, externally focused, future-oriented, and timely information is positively associated with the adoption of contemporary management accounting practices. These contemporary management accounting practices are essential for the development and implementation of business strategies and for achieving the organization's long-term objectives.

Research indicates that alignment among environmental uncertainty, the usefulness of accounting information, and the management accounting practices employed enhances

decision-makers' satisfaction with accounting information. Higher levels of satisfaction subsequently contribute to more effective managerial decision-making.

The Specific Impact of ESG Dimensions on Managerial Decision-Making

Research has examined the effects of the economic, social, and environmental dimensions of sustainability on managerial decision-making, revealing distinct roles for each dimension: The economic dimension of Sustainability Accounting has been found to have a positive and significant influence on managerial decision-making. This finding is consistent with the views of scholars who emphasize the importance of incorporating economic sustainability into the decision-making process. Sustainable decision-making requires managers to balance short-term objectives with long-term goals, and the economic dimension helps organizations identify opportunities for sustainable economic growth.

The social dimension also plays a significant role in managerial decision-making within industrial companies. Social sustainability encompasses ethical standards such as human rights, diversity, health and safety, and equity. The disclosure of corporate social responsibility (CSR) serves as a mechanism through which companies communicate their social responsibility initiatives to stakeholders and meet shareholders' expectations. Furthermore, effective corporate social responsibility and good corporate governance contribute to the development of long-term brand equity, particularly within the manufacturing sector.

The Environmental Dimension (Environmental Sustainability) and Carbon Accounting

Although the environmental dimension plays a critical role in the global sustainability agenda, its integration into managerial decision-making remains inconsistent across industrial sectors. For example, studies have identified shortcomings in the incorporation of environmental sustainability into managerial decisions within industrial companies in Sudan. This inconsistency may be attributed to the ineffective enforcement of environmental protection legislation and the absence of an adequate accounting framework to support the disclosure and integration of environmental information.

Globally, Carbon Accounting is recognized as a critical component in mitigating climate change. Carbon Accounting enables the quantification of greenhouse gas (GHG) emissions and the identification of emission reduction opportunities, thereby facilitating CO₂-adaptive decision-making for a wide range of stakeholders. According to the Greenhouse Gas Protocol: Corporate Accounting and Reporting Standard, greenhouse gas emissions are classified into three scopes:

- Scope 1: Direct emissions from sources that are owned or controlled by the organization.
- Scope 2: Indirect emissions resulting from the generation of purchased and consumed electricity.
- Scope 3: All other indirect emissions not included in Scope 1 or Scope 2, arising from upstream and downstream activities throughout the value chain.

Scope 3 emissions are particularly significant, accounting for an average of 64% of a product's carbon footprint and contributing approximately 70–80% of the total carbon footprint across most manufacturing industries. Therefore, robust Carbon Accounting enables organizations to make CO₂-adaptive decisions in supply chain management and operational

activities, thereby supporting more effective sustainability strategies and emissions reduction initiatives.

C. RESEARCH METHODOLOGY

This study adopts a quantitative approach, consistent with the positivist research paradigm, to examine the hypothesized relationships between the dimensions of Sustainability Accounting (ESG) and Managerial Decision-Making. Sustainability Accounting is defined as the integration of economic, environmental, and social factors into the accounting system to generate and deliver high-quality information that supports organizational sustainability.

The research employs a correlational design to analyze how ESG factors, serving as proxies for Sustainability Accounting, influence managerial decision-making processes. This approach is appropriate because strategic decisions have long-term implications for organizational performance and therefore require reliable and comprehensive information. Previous studies in the field of management accounting have commonly utilized Structural Equation Modeling (SEM) to examine causal relationships among similar constructs.

The target population of this study consists of top-level executives and managers, including Chief Executive Officers (CEOs), Chief Financial Officers (CFOs), and department managers in industrial or manufacturing companies. Senior managers are selected because they possess a high level of awareness regarding strategic practices and organizational performance.

The manufacturing sector is chosen as the research context because it is characterized by large-scale investments, high operational risks, and an increasing demand for strategic information. Prior literature indicates that large manufacturing firms have greater information requirements for managerial decision-making and are more likely to implement advanced management accounting practices.

The recommended sampling technique is stratified random sampling, focusing on top management personnel. The sample size should be determined to ensure adequate statistical power, as recommended by Hair et al. (2006). This study includes independent variables, namely the dimensions of Sustainability Accounting (ESG), and a dependent variable, namely Managerial Decision-Making (DM).

Table 1. Dimensions of Research Variables

Variables	Construct	Operational Description	Measurement Source
Independent Variable	Sustainability Accounting (ESG) Dimensions	This measurement encompasses three dimensions of Sustainability Accounting (SA): Economic (ES), Social (SS), and Environmental (ENV).	Adapted from previous studies on SA and decision-making.
Dependent Variable	Managerial Decisions (DM)	Decision-making (DM) is the process by which managers analyze problems, consider options, and select the most appropriate course of action to achieve organizational goals. This variable reflects the extent to which ESG information is used to influence or facilitate strategic decisions.	Measured based on the perception or level of information usage in managerial decisions.

Source: Processed by the researcher, 2026

All questionnaire items will be measured using a Likert scale—for instance, a 5-point scale (ranging from 1 = not useful/strongly disagree to 5 = highly useful/strongly agree)—to assess information usefulness and perceptions. Primary data will be collected via structured questionnaires distributed online or through face-to-face interviews to ensure a low rate of data loss or invalidity. The questionnaire was designed based on a review of relevant literature and refined through expert feedback (pre-testing).

To ensure the quality and validity of the instrument, variable measurements were adapted from instruments validated in prior research. The collected data will be used to assess the extent of the usefulness of accounting information (including non-financial, external, and future-oriented information) in decision-making under conditions of environmental uncertainty.

The collected data will be analyzed using statistical software such as SPSS or AMOS, or software based on Partial Least Squares Structural Equation Modeling (PLS-SEM). The analysis techniques employed include:

- Reliability Analysis: Uses Cronbach's Alpha coefficient to assess the instrument's internal consistency. Values above 0.70 are generally considered an acceptable level of reliability.
- Confirmatory Factor Analysis (CFA): Used to assess the fit of the measurement model, including the Chi-Square to degrees of freedom ratio (χ^2/df) and the Comparative Fit Index (CFI).
- Hypothesis Testing: Uses Structural Equation Modeling (SEM) or PLS-SEM to test direct and indirect relationships between variables. Hypothesis testing results are determined based on Critical Ratio (C.R.) values and p-values (statistical significance).

D. RESULT AND DISCUSSION

Constant changes in the organizational environment driven by rapid technological advancements, intensifying competition, and new demands regarding social and environmental responsibility have heightened uncertainty (Pires, Alves, & Fernandes, 2023). In this context, corporate sustainability is increasingly recognized as a crucial component directly linked to corporate reputation (Kurniawan & Sawarjuwono, 2024). Sustainability Accounting has emerged as a modern accounting field requiring companies to integrate and report on Environmental, Social, and Governance (ESG) issues (Ozili, 2021). It encompasses the measurement, assessment, and reporting of an organization's impact across economic, social, and environmental dimensions (Musa, 2024).

The primary objective of Sustainability Accounting is to expand the scope of traditional financial accounting to incorporate both monetary and non-financial data, particularly regarding an organization's social and environmental performance (Ozili, 2021). By adopting Sustainability Accounting, companies can make well-informed decisions that balance financial success with social and environmental responsibilities (Wahyudi, Unggul, Mahroji, & Unggul, 2024). Managers are expected to utilize this information skillfully when making strategic, tactical, or operational decisions (Sharma & Maurya, 2025). This study aims to review the

literature on the adoption of Sustainability Accounting and investigate the specific impact of ESG dimensions on the effectiveness of managerial decisions.

ESG Dimensions in Sustainability Accounting

Sustainability accounting integrates economic, social, and environmental factors into accounting systems (Musa, 2024). Sustainability reporting helps advance UN goals aimed at improving corporate and governmental performance across social, environmental, and economic domains (Difalla & Belouadah, 2022). Adopting sustainability accounting offers benefits such as enhancing brand reputation and loyalty, as well as presenting information to financial report readers regarding the risks and opportunities facing the business (Difalla & Belouadah, 2022).

In the context of management accounting, the implementation of the Balanced Scorecard which encompasses four perspectives: learning and growth, financial data, the customer perspective, and business processes—is considered crucial for an organization's future trajectory and can significantly influence performance (Anca & Rainer, 2015). The Balanced Scorecard also serves as a strategic performance management system capable of providing both financial and non-financial information to top management (Abu-Allan, 2024).

The Impact of ESG Dimensions on Managerial Decisions

Managerial decisions are influenced by the dimensions of Sustainability Accounting (Musa, 2024). Empirical studies, particularly within the industrial sector, have examined the extent to which these dimensions affect managerial decision-making:

Economic Sustainability. The economic dimension has a positive and significant impact on decision-making in Sudanese manufacturing firms (Musa, 2024). Economic Sustainability focuses on economic development strategies aimed at improving living standards globally (Beloudah, Abdalah, & Mohammed, 2023). Decision-makers often consider economic factors to mitigate business risks (Palm, Cornell, & Hayha, 2021). Furthermore, integrating Economic Sustainability into decision-making requires balancing short-term and long-term considerations (Kandakoglu, Frini, & Ben Amor, 2019).

Social Sustainability also plays a role in decision-making within Sudanese industrial firms (Musa, 2024). Social Sustainability encompasses ethical behavioral standards such as human rights, diversity, health, safety, and distributive justice (Duong & Ha, 2021; Gray, Brennan, & Malpas, 2014). The dissemination of social information serves as a tool to explain a business's social actions to the public and demonstrate transparency (Hussaien et al., 2021).

Environmental Sustainability. Although industry has historically been a major driver of environmental degradation (Beredugo & Mefor, 2012), research shows that in some contexts, environmental dimensions have not been fully integrated. For example, in Sudanese industrial companies, environmental dimensions do not support decision-making, due to ineffective environmental protection laws and the failure of accounting regulatory bodies to establish an adequate framework for environmental disclosure (Musa, 2024). Nevertheless, Carbon Accounting is seen as a crucial element for mitigating global climate change, enabling the quantification of greenhouse gas emissions and the identification of reduction potential, thus supporting adaptive decision-making regarding CO₂ (Stroher, Korner, Paetzold, & Strucker, 2025).

Impact of ESG Dimensions Related to Strategic Managerial Accounting

The integration of sustainability dimensions into managerial decisions is often associated with Strategic Management Accounting practices. Strategic Management Accounting helps organizations track the effectiveness of strategic initiatives, often by comparing performance with competitors in the market (Sharma & Maurya, 2025).

Environmental Uncertainty and Information Needs. Amid increasing environmental uncertainty, decision-makers require accurate accounting information to make strategic decisions (Adeniran & Obembe, 2020; Oyewo, 2021). Managerial accounting must provide comprehensive information (non-financial, external, and future-oriented) and be timely (Pires et al., 2023).

- There is a positive and significant relationship between environmental uncertainty and the usefulness of timely accounting information for decision-making (Pires et al., 2023).
- As the usefulness of broad and timely information increases, there is an increase in the use of Contemporary Management Accounting Practices (Abdel-Kader & Luther, 2008; Boulianne, 2007). Contemporary decision-making tools, such as the Balanced Scorecard, incorporate non-financial, external, and future-oriented information, which are essential for strategy development and implementation (Baines & Langfield-Smith, 2003; Oyewo, 2022).

The implementation of performance measurement systems, such as the Balanced Scorecard, plays a crucial mediating role in strategic decision-making, reflecting a company's efforts to respond to contingency factors like environmental uncertainty and business strategy (Abu-Allan, 2024).

- The Balanced Scorecard was found to partially mediate the relationship between perceived environmental uncertainty and organizational performance (Abu-Allan, 2024). This indicates that while the Balanced Scorecard contributes to outcomes, other factors also influence organizational performance amidst uncertainty (Abu-Allan, 2024).
- BSC implementation was also found to fully mediate the relationship between business strategy and organizational performance (Abu-Allan, 2024). This underscores the importance of the Balanced Scorecard as a system that helps Jordanian manufacturing managers understand company growth and link current conditions to long-term strategic goals (Abu-Allan, 2024).

E. COCNLUSION

This literature review highlights the crucial role of adopting Sustainability Accounting and ESG dimensions in supporting managerial decision-making, particularly when navigating uncertain environments. Managerial decision-making within a sustainability context relies heavily on economic sustainability and social sustainability dimensions. However, research indicates that the integration of environmental dimensions into managerial decision-making remains insufficient across certain industrial contexts (Musa, 2024).

Developing and testing specific frameworks or guidelines to assist accountants in adequately measuring and disclosing environmental information, while addressing existing legal and regulatory challenges (Musa, 2024).

Exploring the use of a combination of traditional and contemporary management accounting practices (MAPs) including ESG-related practices to ensure effective managerial

decision-making, given the complementary nature of these practices, especially when facing significant demands for social and environmental responsibility (Pires et al., 2023).

Validating findings regarding the mediating role of performance systems, such as the balanced scorecard, within the broader ESG context to assess how sustainability dimensions influence managerial decision-making strategies and overall organizational performance (Abu-Allan, 2024).

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