

## MANAGEMENT ACCOUNTING MECHANISMS FOR ORGANIZATIONAL SUSTAINABILITY UNDER ENVIRONMENTAL UNCERTAINTY: A SYSTEMATIC LITERATURE REVIEW

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**Abstract:** Organizations increasingly pursue sustainability while facing rapid regulatory, technological, market, and societal changes. In this context, management accounting has evolved beyond its traditional financial role to support strategic decision-making, organizational control, and sustainability. This study systematically reviews research on management accounting mechanisms that enhance sustainability and examines the role of environmental uncertainty. A Systematic Literature Review was conducted following PRISMA guidelines. Articles were retrieved from Scopus using predefined search and selection criteria. After title, abstract, and full-text screening, 40 empirical studies were included and analyzed using thematic synthesis. The findings indicate that Environmental Management Accounting, Management Control Systems, Strategic Management Accounting, and Performance Measurement Systems contribute to sustainability outcomes through capabilities such as green innovation, dynamic capabilities, organizational resilience, and green human resource management. However, environmental uncertainty remains conceptually underdeveloped and is rarely operationalized empirically. This study proposes a contingency-based framework integrating management accounting mechanisms, environmental uncertainty, and sustainability performance.

**Keywords:** *management accounting mechanism, organizational sustainability, environmental uncertainty*

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### 1. Introduction

Over the past few decades, organizations across various sectors have been operating in increasingly dynamic, complex, and unpredictable environments driven by climate change, environmental degradation, technological advancement, regulatory changes, and growing demands from diverse stakeholders (Aguilera et al., 2021; Haleem et al., 2022). These conditions have intensified environmental uncertainty, requiring organizations to develop adaptive management mechanisms that support the achievement of economic, social, and environmental objectives in a sustainable manner. Sustainability is no longer viewed merely as a component of corporate social responsibility (CSR), rather, it has evolved into a strategic imperative that determines an organization's competitiveness, resilience, and long-term

viability (Florez-Jimenez et al., 2025; Nguyen & Kanbach, 2023). In line with this shift, recent studies suggest that achieving sustainability objectives requires organizations to integrate sustainability considerations into decision-making processes, governance practices, resource management, and internal management systems (Beusch et al., 2022; Schaltegger et al., 2022). This transformation has also increased the demand for information that extends beyond traditional financial measures to include environmental and social information capable of supporting organizational responses to environmental change and facilitating the continuous creation of sustainable value (Schaltegger et al., 2022; Ascani et al., 2021).

Addressing these sustainability challenges requires organizations to establish management systems that generate relevant, integrated, and strategically oriented information to support strategic decision-making and the achievement of sustainability objectives. In this context, management accounting has evolved substantially from its traditional role of supporting cost accumulation, budgetary control, and financial performance evaluation toward a strategic management system that provides information for strategy formulation and implementation, managerial decision-making, and the creation of sustainable value (Dlamini, 2023; Carmona & Ezzamel, 2023; Beusch, 2020; Schaltegger et al., 2022). Recent literature suggests that the relationship between management accounting and organizational strategy is reciprocal, whereby strategic developments not only rely on management accounting information but also stimulate the refinement and innovation of management accounting systems (Carmona & Ezzamel, 2023).

These developments indicate that management accounting is no longer limited to measuring financial performance but has increasingly evolved to provide financial and sustainability-related information that supports planning, control, performance measurement, and organizational decision-making. As sustainability becomes embedded in organizational strategies, management accounting facilitates the integration of environmental, social, and economic information into managerial processes, thereby supporting the implementation of sustainability strategies (Schaltegger et al., 2022; Ascani et al., 2021). Viewed from this perspective, management accounting can be understood as an organizational mechanism that enables organizations to integrate sustainability considerations into decision-making processes and supports the achievement of long-term organizational sustainability.

As sustainability challenges become increasingly complex, management accounting research has evolved by developing a diverse range of management accounting mechanisms designed to support the implementation of sustainability strategies. These mechanisms include Environmental Management Accounting (EMA), Strategic Management Accounting (SMA), Management Control Systems (MCS), Environmental Management Control Systems (EMCS), Eco-control, Performance Measurement Systems (PMS), Sustainability Management Accounting (SMAc), and the Sustainability Balanced Scorecard (SBSC). Although these mechanisms differ in their conceptual foundations, scope, and applications, they share a common objective of providing relevant financial and sustainability-related information to support strategic decision-making, planning, control, performance evaluation, and the implementation of sustainability strategies. Collectively, the reviewed literature suggests that management accounting extends beyond a set of accounting techniques by providing information that supports sustainability-oriented decision-making, organizational control, and the implementation of sustainability strategies (Schaltegger et al., 2022; Christ et al., 2024).

In response to increasingly complex sustainability challenges, management accounting has expanded beyond its traditional financial orientation to support sustainability-related

decision-making. Evidence from recent management accounting research suggests that these mechanisms perform different but complementary functions in supporting sustainability. For example, eco-controls have been shown to facilitate the implementation of proactive sustainability strategies, while their contribution to sustainability performance depends on organizational contingencies that enable firms to balance short- and long-term demands (Monteiro et al., 2025). In particular, Sustainability Management Accounting has been developed to provide future-oriented, long-term, and proactive information for managing multiple sustainability issues and supporting organizational contributions to sustainable development (Christ et al., 2024). This evolution has been accompanied by the emergence of diverse management accounting mechanisms, including Environmental Management Accounting, Strategic Management Accounting, Management Control Systems, Eco-control, and Sustainability Balanced Scorecard, each designed to facilitate the integration of sustainability into organizational processes. Among these developments, Environmental Management Accounting has expanded considerably over the past two decades to address emerging sustainability challenges. Contemporary EMA extends beyond its traditional focus by incorporating social and environmental performance measures alongside economic information, broadening its scope across supply chains and circular systems, and providing sustainability-related information that supports organizations in contributing to sustainable development (Burritt, Schaltegger, & Christ, 2023). Furthermore, evidence from Strategic Management Accounting research indicates that the effectiveness of management accounting practices depends on organizational contingencies, reinforcing the contingency theory proposition that no universally appropriate management accounting system exists (Cadez & Guilding, 2008). Strategic Management Accounting has been recognized as an important mechanism for integrating business strategy with sustainability objectives by supporting the design, implementation, and evaluation of sustainability strategies through governance mechanisms, management control systems, and sustainability-oriented performance measures (Ramadhan et al., 2025). Meanwhile, Environmental Management Accounting (EMA) has increasingly been recognized as a management accounting mechanism that strengthens Environmental, Social, and Governance (ESG) practices while fostering green innovation by providing decision-relevant information for sustainability-oriented decision-making (Van, 2026; Schaltegger et al., 2022). Furthermore, empirical evidence indicates that Performance Measurement Systems (PMS), particularly through the use of diagnostic and interactive control systems, serve as internal organizational capabilities that mediate the relationship between sustainable development strategies and both ESG performance and financial performance, thereby enabling organizations to translate sustainability strategies into operational practices and sustainability outcomes (Dong, Son, & Roh, 2025). Collectively, these findings suggest that different management accounting mechanisms contribute to organizational sustainability in distinct ways. However, most existing studies have examined individual mechanisms in isolation, resulting in a fragmented understanding of how various management accounting mechanisms collectively shape sustainability-related organizational outcomes.

Despite the growing body of research on management accounting mechanisms for sustainability, the existing literature remains highly fragmented. Most empirical studies have examined individual mechanisms such as Strategic Management Accounting (SMA), Environmental Management Accounting (EMA), Performance Measurement Systems (PMS), Management Control Systems (MCS), eco-controls, or Sustainability Balanced Scorecard (SBSC) within specific industrial contexts and organizational settings, while focusing on

different mediating variables and sustainability-related outcomes (Schaltegger et al., 2022; Christ et al., 2024). Although these studies have generated valuable insights into the effectiveness of individual mechanisms, they provide only a partial understanding of how different management accounting mechanisms collectively support organizational sustainability. Furthermore, prior research has predominantly emphasized testing direct and indirect relationships among variables rather than systematically examining the complementary roles of different management accounting mechanisms, their interrelationships, and the organizational conditions under which they become most effective (Cadez & Guilding, 2008; Monteiro et al., 2025). Consequently, there remains limited integrative evidence explaining how various management accounting mechanisms jointly contribute to sustainability-related organizational outcomes and how their effectiveness may vary under conditions of environmental uncertainty. This fragmentation highlights the need for a systematic literature review that synthesizes existing evidence, identifies the management accounting mechanisms employed to support organizational sustainability, and develops a more comprehensive understanding of their roles, interconnections, and effectiveness across different organizational contexts (Schaltegger et al., 2022; Christ et al., 2024).

The fragmentation of the literature becomes even more critical when organizations operate under conditions of increasing environmental uncertainty driven by regulatory changes, market volatility, technological disruption, climate-related challenges, and growing stakeholder expectations for sustainability (Schaltegger et al., 2022; Christ et al., 2024). Under such conditions, the effectiveness of management accounting mechanisms depends not only on the characteristics of the mechanisms themselves but also on their alignment with the organizational context, consistent with the central proposition of contingency theory that no universally appropriate management accounting system exists (Cadez & Guilding, 2008). Recent studies have also shown that the effectiveness of sustainability-oriented management accounting practices, including eco-controls and Environmental Management Accounting, is shaped by contextual conditions surrounding their implementation rather than by the mechanisms alone (Monteiro et al., 2025; Alwan & Maelah, 2024). Nevertheless, existing studies generally examine environmental uncertainty within the context of individual management accounting mechanisms, resulting in limited integrative evidence explaining how environmental uncertainty influences the effectiveness of different management accounting mechanisms in achieving sustainability-related organizational outcomes. This limitation highlights the need for a systematic literature review that synthesizes existing evidence to explain not only which management accounting mechanisms have been employed, but also how their roles and effectiveness vary across different conditions of environmental uncertainty.

Building upon the gaps identified above, this study conducts a systematic literature review to provide a comprehensive synthesis of the expanding body of knowledge on management accounting mechanisms for sustainability. Previous review studies have examined specific areas of management accounting, including corporate sustainability management accounting, sustainability management accounting, and the role of management accountants in sustainability reporting (Ascani et al., 2021; Schaltegger et al., 2022; Christ et al., 2024). However, limited attention has been devoted to synthesizing the broader spectrum of management accounting mechanisms and explaining how these mechanisms collectively contribute to sustainability-related organizational outcomes across different organizational contexts. Moreover, the influence of environmental uncertainty on the effectiveness of

diverse management accounting mechanisms has not been systematically synthesized. Accordingly, this review aims to integrate fragmented empirical evidence by identifying the management accounting mechanisms employed to support organizational sustainability, examining how environmental uncertainty shapes their effectiveness, and highlighting promising directions for future research.

Based on the identified research gaps, this study conducts a Systematic Literature Review (SLR) to identify, classify, and synthesize the development of management accounting mechanisms that have been employed to support sustainability-related organizational outcomes, while also examining how environmental uncertainty shapes the implementation and effectiveness of these mechanisms across different organizational contexts. Through a systematic synthesis of the existing literature, this study aims to develop a more comprehensive understanding of the characteristics, roles, and interrelationships of various management accounting mechanisms in supporting organizational sustainability strategies. Accordingly, this review is expected to make a theoretical contribution by advancing a more integrated conceptual framework that explains the relationships among management accounting mechanisms, environmental uncertainty, and sustainability-related organizational outcomes, while also identifying promising avenues for future research. In addition, the findings are expected to provide practical implications for managers, organizations, and policymakers in selecting and developing management accounting mechanisms that are aligned with varying levels of environmental uncertainty to support the achievement of long-term organizational sustainability.

## **2. Research Method**

### **2.1. Research Design**

This study employs a Systematic Literature Review (SLR) to identify, evaluate, and systematically synthesize the existing literature on management accounting mechanisms that support sustainability-related organizational outcomes. The SLR approach was selected because it provides a rigorous, transparent, and replicable process for identifying, selecting, critically evaluating, and synthesizing relevant studies, thereby generating a more comprehensive and reliable body of evidence than traditional narrative reviews (Tranfield et al., 2003; Snyder, 2019). Consistent with recommendations for conducting literature reviews in accounting research, this review follows a structured review protocol that includes clearly defined research questions, explicit inclusion and exclusion criteria, systematic study selection, and evidence-based synthesis to identify research patterns, knowledge gaps, and future research directions (Massaro et al., 2016). Furthermore, the review was conducted in accordance with the PRISMA 2020 guidelines to ensure transparency and consistency throughout the processes of study identification, screening, eligibility assessment, and inclusion (Page et al., 2021). This approach is particularly appropriate for the objectives of the present study, which seeks to integrate fragmented empirical evidence on diverse management accounting mechanisms and explain how environmental uncertainty shapes their implementation and effectiveness across different organizational contexts.

The conduct and reporting of this review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines developed by Page et al. (2021). PRISMA was adopted as a reporting framework to ensure that the review process from study identification, screening, and eligibility assessment to the final inclusion of studies was conducted in a systematic, transparent, and reproducible manner. In addition to improving the completeness and transparency of reporting, the use of PRISMA enhances the

traceability of the review process and reduces the risk of bias associated with study selection (Page et al., 2021).

In this study, PRISMA was employed solely as a reporting guideline rather than as an analytical method. Following the selection of eligible studies, the extracted data were synthesized using descriptive and thematic analyses to identify the characteristics of the reviewed studies, classify the management accounting mechanisms employed, map sustainability-related organizational outcomes, examine the role of environmental uncertainty, and develop an integrated conceptual understanding of the relationships among management accounting mechanisms, environmental uncertainty, and sustainability-related organizational outcomes. The synthesis also enabled the identification of emerging research themes, knowledge gaps, and promising directions for future research (Massaro et al., 2016).

## 2.2. Search Strategy

The literature search strategy was designed to systematically identify studies relevant to the objectives of this review while ensuring transparency, rigor, and reproducibility. The search was conducted using the Scopus database, which was selected because of its extensive coverage of peer-reviewed journals in business, management, and accounting, as well as its comprehensive bibliographic information that facilitates the systematic identification, screening, and retrieval of relevant studies. The selection of the database and the development of the search strategy followed established methodological recommendations for conducting systematic literature reviews in management and accounting research (Tranfield et al., 2003; Massaro et al., 2016).

The search strategy was developed based on the three core concepts of this study: management accounting mechanisms, sustainability-related organizational outcomes, and environmental uncertainty. Search terms were identified through an iterative review of the relevant literature and combined using Boolean operators (AND and OR), together with appropriate synonyms and related terminology commonly used in the management accounting literature. This approach was intended to maximize the retrieval of relevant studies while minimizing the risk of excluding potentially eligible articles due to variations in terminology (Tranfield et al., 2003; Massaro et al., 2016).

The literature search was conducted on 1<sup>st</sup> July 2026 using a single search string that was consistently applied to the Scopus database. The complete search string is presented in Table 1 to ensure the transparency and reproducibility of the review process. All retrieved records were exported in CSV format to facilitate the subsequent processes of screening, data extraction, and analysis. The identification, screening, eligibility assessment, and inclusion of studies were conducted in accordance with the PRISMA 2020 guidelines to ensure a transparent, systematic, and reproducible review process (Page et al., 2021).

**Table 1. Search Terms**

| Component                                             | Search Terms                                                                                                                                                                                                                                                                                        |
|-------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Management Accounting Mechanisms</b>               | ("management accounting" OR "management accounting system*" OR "strategic management accounting" OR "management control system*" OR "management control" OR "performance measurement system*" OR "performance measurement" OR "environmental management accounting" OR "sustainability accounting") |
| <b>Sustainability-related Organizational Outcomes</b> | ("organizational sustainability" OR "environmental performance" OR "environmental innovation" OR "green innovation" OR "eco-innovation" OR "firm performance" OR "business performance" OR "organizational performance" OR "sustainability performance" OR "sustainable performance")               |

| Component                        | Search Terms                                                                                                                                                               |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environmental Uncertainty</b> | ("environmental uncertainty" OR "environmental dynamism" OR "environmental turbulence" OR "market uncertainty" OR "technological uncertainty" OR "regulatory uncertainty") |
| <b>Boolean Logic</b>             | <b>(Management Accounting Mechanisms) AND (Sustainability-related Organizational Outcomes) AND (Environmental Uncertainty)</b>                                             |

### 2.3. Eligibility Criteria

The inclusion and exclusion criteria were established prior to the literature screening process to ensure a transparent, consistent, and reproducible selection of studies relevant to the objectives of this review. Defining explicit eligibility criteria is a fundamental component of a systematic literature review, as it provides a structured basis for study selection and enhances the transparency and reliability of the review process (Tranfield et al., 2003; Massaro et al., 2016; Page et al., 2021). The review included empirical journal articles published between 2022 and 2026 to capture the most recent developments in management accounting mechanisms supporting sustainability-related organizational outcomes. This time frame was selected to reflect the rapid advancement of research in response to growing organizational attention to sustainability, environmental, social and governance (ESG) issues, digital transformation, and increasing environmental uncertainty. Focusing on recent publications also enables the review to provide an up-to-date synthesis of current knowledge and identify emerging research directions.

Only peer-reviewed journal articles published in English, indexed in the Scopus database, and available in full text were included in the review. Review articles, conference proceedings, book chapters, editorials, notes, and studies published in languages other than English were excluded because the review focused exclusively on empirical evidence. In addition, studies that did not examine management accounting mechanisms in relation to sustainability-related organizational outcomes were excluded from the analysis. The eligibility criteria were applied consistently throughout the title screening, abstract screening, and full-text assessment stages in accordance with the PRISMA 2020 guidelines (Page et al., 2021).

**Table 2. Eligibility Criteria**

| Criteria           | Inclusion Criteria                                                                                                     | Exclusion Criteria                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Publication period | 2020–2026                                                                                                              | Before 2020                                                     |
| Database           | Scopus                                                                                                                 | Non-Scopus publications                                         |
| Language           | English                                                                                                                | Non-English                                                     |
| Publication Type   | Research article                                                                                                       | Conference paper, book chapter, editorial, review article, note |
| Publication Status | Final published article                                                                                                | Article in press                                                |
| Subject area       | Business, Management and Accounting                                                                                    | Irrelevant Subject                                              |
| Research Focus     | <i>management accounting mechanisms, sustainability-related organizational outcomes, and environmental uncertainty</i> | Studies outside the research scope                              |
| Accessibility      | Full-text available                                                                                                    | Full text unavailable                                           |

### 3. Results and Discussion

#### 3.1. Results

The study selection process was conducted systematically in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure methodological transparency, consistency, and rigor (Page et al., 2021). The literature search was performed in the Scopus database using a predefined search strategy derived from the research question. To ensure the relevance of the retrieved studies, the search was initially restricted to the Business, Management and Accounting subject area. The retrieved records were subsequently screened through a multi-stage selection process consisting of title screening, abstract screening, and full-text eligibility assessment. At each stage, the predefined inclusion and exclusion criteria were applied consistently to ensure that only studies relevant to the objectives of the review were retained.

The title and abstract screening stages constituted the primary filtering process for excluding studies that fell outside the scope of this review, including studies that did not examine management accounting mechanisms, did not address sustainability-related organizational outcomes, were conceptual or review articles, or did not employ an empirical research design. Consequently, only studies that satisfied all inclusion criteria proceeded to the full-text eligibility assessment. The full-text assessment confirmed that all remaining studies met the eligibility criteria and provided sufficient methodological and empirical information for data extraction and thematic synthesis. As a result, a total of 40 empirical journal articles were included in the final sample of this systematic literature review. The complete study selection process is illustrated in Figure 1.

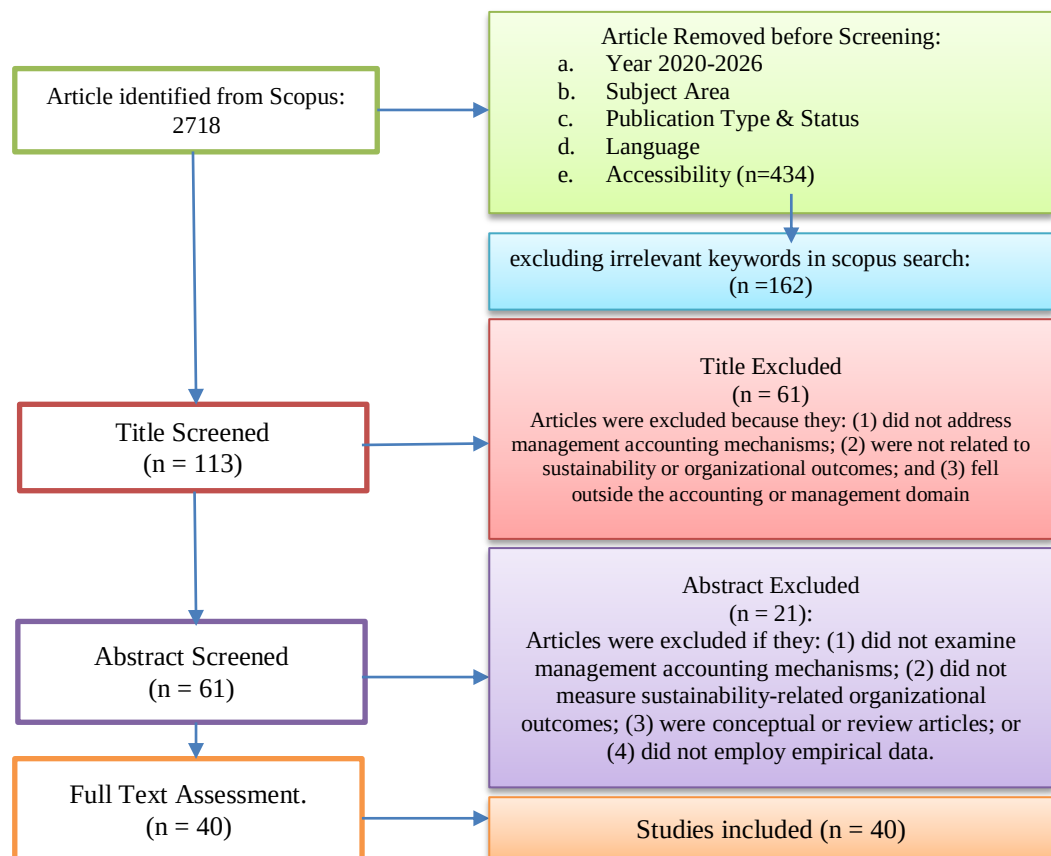


Figure 1. PRISMA 2020 Flow Diagram of the Study Selection Process

### Distribution of Selected Articles by Publication Year

The descriptive analysis commenced by examining the distribution of the selected articles by year of publication to illustrate the evolution of research on management accounting mechanisms and sustainability-related organizational outcomes. Publication trends provide an initial indication of the development and scholarly attention devoted to a research field over time and can help identify periods of increasing research activity (Donthu et al., 2021). This temporal analysis is particularly relevant to sustainability accounting research, where previous reviews have used publication patterns to examine the evolution and changing focus of the field (Owusu & Ofori-Owusu, 2024). Accordingly, the annual distribution of publications is examined to identify whether research interest in management accounting mechanisms and sustainability-related outcomes has increased over the review period and to contextualize subsequent analysis of emerging themes, theoretical perspectives, and environmental uncertainty.

**Table 3. Distribution of Selected Articles by Publication Year**

| Year         | Number of Article                                                                                                                                                                                                                                                                                                                                                                                   | Percentage (%) |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| 2020         | 2<br>Mat Yusoh & Tuan Mat (2020), Le, Dang, & Le (2020),                                                                                                                                                                                                                                                                                                                                            | 5,0            |
| 2021         | 1<br>Hummel, Laun, & Krauss (2021)                                                                                                                                                                                                                                                                                                                                                                  | 2,5            |
| 2022         | 1<br>Alpenberg & Wnuk-Pel (2022)                                                                                                                                                                                                                                                                                                                                                                    | 2,5            |
| 2023         | 4<br>Martins, Oliveira, Silva, & Castelo Branco (2023), Jiao, Harrison, & Chen (2023), Asiaei et al. (2023), Latifah & Soewarno (2023),                                                                                                                                                                                                                                                             | 10             |
| 2024         | 12<br>Antonini & Gomez-Conde (2024), Alnaim & Metwally (2024), Lutfi et al. (2024), Le & Hoang (2024), Al-Dhubaibi et al. (2024), Maulita, Azizah, & Lurturmas (2024), Baird, Nuhu, & Jiao (2024), Farida & Setiawan (2024), Puspitawati, Lhutfi, & Qudratov (2024), Pumiviset & Suttipun (2024), Chetanraj et al. (2024), Phan, Baird, Bhuyan, & Tung (2024),                                      | 30             |
| 2025         | 13<br>Saputra et al. (2025), AlBalushi, Kadir & Javed (2025), Al-Dhubaibi (2025), Al-Nimer (2025), Raksudjarit et al. (2025), Silva et al. (2025), Farida & Setiawan (2025), Kurnianto & Tjahjadi (2025), Knels, Janka & Guenther (2025), Lhassan, Bazarouj, Ouhnine, & Sail (2025), Agoudal, Hilmi, & Benarbi (2025), Lucyanda, Pratiwi, & Gunawan (2025), Van H.V., Abu Afifa M., Bui D.V. (2025) | 32,5           |
| 2026         | 7<br>Wichitsathian & Ekkaphol (2026), Metwally & Hasanein (2026), Zraqat et al. (2026), Susana et al. (2026), Sulanjaku & Shingjergji (2026), Sulanjaku & Ballkoçi (2026), Monteiro et al. (2026)                                                                                                                                                                                                   | 17,5           |
| <b>Total</b> | <b>40</b>                                                                                                                                                                                                                                                                                                                                                                                           | <b>100,0</b>   |

Source: Authors' data extraction from the reviewed studies (2026)

As shown in Table 3, research examining the relationship between management accounting mechanisms and sustainability-related organizational outcomes has exhibited a notable upward trend over the period 2020–2026. Of the 40 articles included in this review, 32 articles (80%) were published during the most recent three-year period (2024–2026), whereas only 8 articles (20%) were published between 2020 and 2023. This distribution

indicates that, within the reviewed literature, the role of management accounting mechanisms in supporting organizational sustainability has attracted substantially increasing scholarly attention in recent years. This pattern is consistent with recent reviews highlighting the expanding research interest in sustainability-oriented management accounting, particularly Environmental Management Accounting and its relationship with organizational sustainability and strategic decision-making (Schaltegger et al., 2022; Swalih et al., 2024).

The concentration of publications during 2024–2026 also suggests an evolving research focus in which management accounting is increasingly examined beyond its traditional emphasis on operational efficiency and financial performance. Recent literature emphasizes the integration of management accounting and control systems with sustainability objectives, organizational strategy, and long-term value creation (Schaltegger et al., 2022). This evolution is reflected in the growing diversity of mechanisms investigated, including Environmental Management Accounting (EMA), Strategic Management Accounting (SMA), Management Control Systems (MCS), Environmental Management Control Systems (EMCS), and Sustainability Management Control Systems (SMCS). These mechanisms are increasingly conceptualized as organizational tools that support sustainability-oriented decision-making, strategic integration, performance management, and the development of organizational capabilities.

#### **Distribution of Selected Articles by Type of Management Accounting Mechanism**

To provide an overview of the evolution of research focus, all reviewed articles were classified according to the type of management accounting mechanism that constituted the primary focus of each study. The classification was based on the management accounting mechanism examined as the main research variable, including Environmental Management Accounting (EMA), Strategic Management Accounting (SMA), Management Control Systems (MCS), Environmental Management Control Systems (EMCS), Sustainability Management Control Systems (SMCS), Performance Measurement Systems (PMS), as well as other management accounting mechanisms. The results of this classification are presented in Table 4.

**Table 4. Distribution of Selected Articles by Type of Management Accounting Mechanism**

| <b>Management Accounting Mechanism</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Number of Article</b> | <b>Percentage (%)</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|
| <b>Environmental Management Accounting (EMA) dan variannya (EMAS, Environmental Accounting Strategy)</b> (Metwally & Hasanein (2026), Sulanjaku & Shingjergji (2026), Sulanjaku & Ballkoçi (2026), Saputra et al. (2025), Van H.V., Abu Afifa M., Bui D.V. (2025), AlBalushi, Kadir & Javed (2025), Alnaim & Metwally (2024), Lutfi et al. (2024), Maulita, Azizah, & Luturmas (2024), Chetanraj et al. (2024), Latifah & Soewarno (2023), Mat Yusoh & Tuan Mat (2020), Le, Dang, & Le (2020)) | 13                       | 32,5                  |
| <b>Management Control Systems (MCS) dan variannya</b> (Silva et al. (2025), Farida & Setiawan (2025), Lhassan, Bazarouj, Ouhnine, & Sail (2025), Agoudal, Hilmi, & Benarbi (2025), Al-Dhubaibi et al. (2024), Farida & Setiawan (2024), Phan, Baird, Bhuyan, & Tung (2024), Martins, Oliveira, Silva, & Castelo Branco (2023), Jiao, Harrison, & Chen (2023))                                                                                                                                  | 9                        | 22,5                  |
| <b>Strategic Management Accounting (SMA) dan variannya</b> (Wichitsathian & Ekkaphol (2026), Zraqat et al. (2026), Al-Nimer                                                                                                                                                                                                                                                                                                                                                                    | 6                        | 15,0                  |

| <b>Management Accounting Mechanism</b>                                                                                                                                                            | <b>Number of Article</b> | <b>Percentage (%)</b> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-----------------------|
| (2025), Raksudjarit et al. (2025), Puspitawati, Lhutfi, & Qudratov (2024), Pumiviset & Suttipun (2024)                                                                                            |                          |                       |
| <b>Performance Measurement Systems (PMS) dan variannya</b><br>(Monteiro et al. (2026), Al-Dhubaibi (2025), Lucyanda, Pratiwi, & Gunawan (2025), Asiaei et al. (2023), Alpenberg & Wnuk-Pel (2022) | 5                        | 12,5                  |
| <b>Environmental Management Control Systems (EMCS)</b> (Knels, Janka & Guenther (2025), Antonini & Gomez-Conde (2024), Hummel, Laun, & Krauss (2021),                                             | 3                        | 7,5                   |
| <b>Sustainability Management Control Systems (SMCS/SMAS)</b><br>(Susana et al. (2026), Kurnianto & Tjahjadi (2025)                                                                                | 2                        | 5,0                   |
| <b>Advanced management accounting techniques (BSC–ABC)</b> (Al-Dhubaibi (2025), Baird, Nuhu, & Jiao (2024),                                                                                       | 2                        | 5,0                   |
| <b>Total</b>                                                                                                                                                                                      | <b>40</b>                | <b>100,0</b>          |

Source: Authors' data extraction from the reviewed studies (2026)

Table 2 shows that Environmental Management Accounting (EMA) is the most extensively studied management accounting mechanism, accounting for 13 articles (32.5%) of the total studies reviewed. This dominance indicates that the literature continues to regard EMA as the primary mechanism for supporting sustainability, particularly through improvements in environmental performance, corporate environmental performance, and sustainability performance (Metwally & Hasanein, 2026; Sulanjaku & Shingjergji, 2026; Sulanjaku & Ballkoçi 2026). EMA is commonly employed to provide information on environmental costs, resource consumption, waste management, and sustainability-oriented decision-making.

The second largest group comprises Management Control Systems (MCS) and its various forms including interactive control systems, management control practices, modern management control practices, and eco-controls with a total of 9 articles (22.5%). This finding suggests that research has gradually shifted from emphasizing the provision of accounting information toward examining how management control systems are used to integrate strategy, enhance organizational capabilities, strengthen organizational resilience, and support the achievement of sustainability objectives (Silva et al., 2025), Farida & Setiawan, 2025), Lhassan, Bazarouj, Ouhnine, & Sail, 2025).

Strategic Management Accounting (SMA) ranks third, with 6 articles (15.0%). Although fewer studies have examined SMA compared with EMA and MCS, most SMA-related research has been published in recent years, indicating a growing research interest. This trend suggests that scholarly attention is increasingly directed toward the use of strategic information such as environmental scanning, technology intelligence, customer accounting, and competitor accounting to support sustainability-oriented strategic decision-making (Wichitsathian & Ekkaphol, 2026; Zraat et al., 2026; Al-Nimer, 2025).

In addition, several studies have investigated Performance Measurement Systems (PMS), Environmental Management Control Systems (EMCS), and Sustainability Management Control Systems (SMCS) as more specialized mechanisms for integrating economic, social, and environmental dimensions into organizational performance measurement and control processes (Knels, Janka & Guenther, 2025; Susana et al., 2026). Although these mechanisms

appear less frequently in the literature, their emergence reflects a growing shift toward more integrated and sustainability-oriented management accounting approaches.

### **Distribution of Sustainability-Related Organizational Outcomes**

To better understand how management accounting mechanisms contribute to organizational sustainability, all reviewed articles were subsequently classified according to the type of sustainability-related organizational outcome examined as the dependent variable or primary research outcome. Given the diversity of outcome measures employed across the literature, these outcomes were grouped into several categories with similar characteristics, including sustainability performance, environmental performance, organizational performance, firm performance, competitive advantage, and other sustainability-related organizational outcomes. The results of this classification are presented in Table 5.

**Table 5. Distribution of Sustainability-Related Organizational Outcomes**

| <b>Sustainability-Related Organizational Outcomes</b>                     | <b>Number of Article</b> | <b>Percentage (%)</b> |
|---------------------------------------------------------------------------|--------------------------|-----------------------|
| Sustainability Performance                                                | 11                       | 27,5                  |
| Environmental Performance (including Corporate Environmental Performance) | 10                       | 25,0                  |
| Organizational Performance                                                | 8                        | 20,0                  |
| Firm Performance                                                          | 6                        | 15,0                  |
| Competitive Advantage / Organizational Competitiveness                    | 3                        | 7,5                   |
| Organizational Resilience / Innovation Capability / Value Creation        | 2                        | 5,0                   |
| <b>Total</b>                                                              | <b>40</b>                | <b>100,0</b>          |

Source: Authors' data extraction from the reviewed studies (2026)

As shown in Table 5, Sustainability Performance is the most frequently examined outcome, appearing in 11 articles (27.5%). This finding indicates that the literature has increasingly shifted from evaluating organizational performance solely in financial terms toward a more comprehensive assessment that integrates economic, environmental, and social dimensions. Across the reviewed studies, sustainability performance is commonly used to assess the extent to which management accounting mechanisms support long-term value creation through improved resource efficiency, environmental responsibility, and organizational sustainability.

The second largest category is Environmental Performance (including Corporate Environmental Performance), which appears in 10 articles (25.0%). The prominence of this category suggests that a substantial proportion of the literature continues to conceptualize sustainability primarily from an environmental perspective, focusing on outcomes such as emissions reduction, energy efficiency, waste management, efficient resource utilization, and compliance with environmental regulations. This finding is consistent with the predominance of Environmental Management Accounting (EMA) identified in the previous analysis, as EMA is specifically designed to generate accounting information that supports the management of organizations' environmental impacts.

Beyond these two dominant categories, a considerable number of studies examine Organizational Performance (20.0%) and Firm Performance (15.0%) as their primary outcomes. Although these measures do not always explicitly capture sustainability, most

studies associate improvements in organizational or firm performance with the implementation of management accounting practices that facilitate sustainability, including enhanced operational efficiency, organizational adaptability, innovation, and long-term value creation. Accordingly, these outcomes were classified as sustainability-related organizational outcomes, as they reflect organizational impacts that contribute to broader sustainability objectives.

In contrast, outcomes such as Competitive Advantage, Organizational Resilience, Innovation Capability, and Value Creation are comparatively underrepresented in the literature. Nevertheless, these outcomes are becoming increasingly important in organizational environments characterized by rapid change and high levels of environmental uncertainty. Their limited representation suggests that existing research remains primarily focused on measuring performance outcomes, while comparatively less attention has been devoted to understanding how management accounting mechanisms contribute to the development of long-term organizational capabilities that underpin sustainable performance.

### **Distribution of Theoretical Perspectives**

To identify the conceptual foundations underpinning the relationship between management accounting mechanisms and sustainability-related organizational outcomes, the reviewed articles were analyzed according to the theoretical perspectives they employed. Because a single study may draw upon multiple theories, the categories presented in this section are not mutually exclusive. Consequently, the total number of theoretical perspectives identified exceeds the 40 articles included in the review.

The mapping results indicate that the Resource-Based View (RBV) is the most dominant theoretical perspective, appearing in 13 articles (32.5%) of the reviewed studies. RBV is primarily employed to explain how management accounting mechanisms, strategic information, management control systems, and organizational capabilities function as internal resources that enable organizations to enhance efficiency, competitiveness, innovation, and sustainability performance. Several studies further extend the RBV perspective by incorporating related frameworks, including the Natural Resource-Based View (NRBV), Knowledge-Based View (KBV), Dynamic Capability View (DCV), and Intellectual Capital-Based View (ICBV).

The predominance of resource-based perspectives suggests that the existing literature largely conceptualizes management accounting mechanisms as internal organizational capabilities that facilitate information processing, resource allocation, innovation, and the development of competitive advantage. However, this perspective primarily emphasizes the resources and capabilities possessed by organizations and therefore does not always adequately explain why the effectiveness of the same management accounting mechanism may vary across different environmental contexts.

Contingency Theory is the second most frequently adopted perspective, appearing in 8 articles (20.0%) of the reviewed studies. This perspective argues that the effectiveness of management accounting practices is not universal but depends on their alignment with organizational and environmental characteristics, such as regulatory requirements, competitive intensity, technological conditions, leadership, organizational structure, and the dynamics of the external business environment. Although Contingency Theory is the second most widely applied theoretical perspective, a closer examination reveals that environmental uncertainty has not consistently been operationalized as an empirical construct. In many studies, uncertainty is mentioned only as contextual background, referring to dynamic

business environments, economic crises, competitive pressures, or regulatory changes. Only a limited number of studies explicitly examine environmental factors as contingency variables, moderators, or contextual conditions that shape the effectiveness of management accounting mechanisms.

Stakeholder Theory, Institutional Theory, and the Levers of Control (LOC) framework each appear in six articles. Stakeholder Theory is commonly used to explain how stakeholder expectations encourage organizations to adopt environmental accounting practices and sustainability management control systems. Institutional Theory emphasizes the influence of coercive, normative, and mimetic pressures on the adoption of management accounting mechanisms. Meanwhile, the Levers of Control framework explains how the diagnostic and interactive use of management control systems influences innovation, adaptive capabilities, and organizational performance.

Legitimacy Theory appears in five articles, particularly in studies examining Environmental Management Accounting (EMA), environmental accounting strategies, and the Sustainability Balanced Scorecard (SBSC). This perspective suggests that the adoption of sustainability-oriented management accounting mechanisms is driven not only by considerations of internal efficiency but also by organizations' need to gain or maintain legitimacy in the eyes of governments, communities, investors, and other stakeholders.

### **Distribution of the Role of Environmental Uncertainty**

To address the second part of the research question, each reviewed article was analyzed according to how environmental uncertainty was positioned within the research model. This analysis aimed to identify whether environmental uncertainty was treated as an empirical variable, moderator, mediator, antecedent, or merely as a contextual factor underlying the adoption and implementation of management accounting mechanisms. The results of this classification are presented in Table 6.

**Table 6. Distribution of the Role of Environmental Uncertainty**

| <b>Positioning of Environmental Uncertainty</b>                                                                                        | <b>Number of Article</b> |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <i>Not addressed</i>                                                                                                                   | 4                        |
| <i>Context only</i>                                                                                                                    | 29                       |
| <i>Other Contingency Factors (e.g., Competitive Forces, Environmental Regulation, Stakeholder Pressure, Environmental Proactivity)</i> | 7                        |
| <b>Total Articles</b>                                                                                                                  | <b>40</b>                |

Source: Authors' data extraction from the reviewed studies (2026)

To address the second part of the research question, each reviewed article was analyzed according to how environmental uncertainty was positioned within the study. This analysis aimed to determine whether environmental uncertainty was incorporated as part of the research model or merely used as a contextual background for the adoption and implementation of management accounting mechanisms. The results of this classification are presented in Table 6.

As shown in Table 6, the majority of the reviewed studies (29 out of 40 articles) treated environmental uncertainty solely as a contextual background. In these studies, factors such as regulatory changes, market dynamics, technological developments, competitive pressures, and stakeholder demands were used to characterize the external environment that motivates organizations to adopt various management accounting mechanisms. However, these factors were not operationalized as empirical constructs or explicitly tested within the research

models. Furthermore, four articles did not address environmental uncertainty or related concepts at all, focusing exclusively on the relationship between management accounting mechanisms and sustainability-related organizational outcomes without considering the influence of external environmental conditions.

A further seven articles employed concepts that are conceptually similar to environmental uncertainty, although they did not explicitly use the term. These concepts included competitive forces, environmental regulation, stakeholder pressure, environmental proactivity, business risk, and other forms of structural and behavioral contingencies. In these studies, external environmental conditions were viewed as factors influencing the effectiveness of management accounting mechanisms, thereby reflecting the underlying assumptions of Contingency Theory, which emphasizes the importance of achieving a fit between organizational mechanisms and the characteristics of the environment in which organizations operate.

The most significant finding of this analysis is that none of the reviewed articles explicitly operationalized environmental uncertainty as an empirical construct, for example by measuring managers' perceived environmental uncertainty or the level of environmental dynamism. Consequently, the existing literature continues to treat environmental uncertainty primarily as a conceptual background rather than as a variable that systematically explains when and under what conditions management accounting mechanisms contribute to sustainability-related organizational outcomes. This finding reveals an important gap in the literature and suggests that future research should place greater emphasis on empirically examining environmental uncertainty as a contingency factor that shapes the effectiveness of management accounting mechanisms in promoting organizational sustainability.

### **3.2. Discussion**

#### **The Evolution of Management Accounting Mechanisms for Sustainability**

The findings of this systematic literature review indicate that management accounting mechanisms have evolved from their traditional role of supporting cost control and financial reporting into strategic organizational mechanisms that facilitate the achievement of sustainability-related organizational outcomes. The descriptive analysis demonstrates that Environmental Management Accounting (EMA) and Management Control Systems (MCS) remain the dominant mechanisms examined in the literature, followed by Strategic Management Accounting (SMA), Performance Measurement Systems (PMS), Environmental Management Control Systems (EMCS), and Sustainability Management Control Systems (SMCS). This pattern suggests that recent research increasingly recognizes management accounting not merely as a provider of financial information but as an integrated system that supports organizations in balancing economic, environmental, and social objectives.

Evidence from the reviewed studies consistently shows that these mechanisms contribute to a wide range of sustainability-related organizational outcomes, although through different organizational pathways. Studies on EMA predominantly report positive effects on environmental and sustainability performance by improving environmental information quality, supporting resource efficiency, strengthening environmental decision-making, and facilitating green innovation (Metwally & Hasanein, 2026; Sulanjaku & Shingjergji, 2026; Saputra et al., 2025; AlBalushi et al., 2025; Lutfi et al., 2024; Maulita et al., 2024; Chetanraj et al., 2024). Similarly, studies on MCS, EMCS, and SMCS demonstrate that management control mechanisms enhance sustainability performance by aligning organizational strategy with sustainability objectives, encouraging organizational learning, strengthening resilience,

and promoting environmental innovation (Monteiro et al., 2026; Knels et al., 2025; Kurnianto & Tjahjadi, 2025; Antonini & Gomez-Conde, 2024; Phan et al., 2024). Meanwhile, research on SMA increasingly emphasizes the strategic use of forward-looking information including environmental scanning, technology intelligence, customer accounting, and competitor accounting to improve sustainability performance, operational efficiency, and strategic decision-making (Wichitsathian & Ekkaphol, 2026; Zraqat et al., 2026; Al-Nimer, 2025; Raksudjarit et al., 2025; Pumiviset & Suttipun, 2024).

Another important finding emerging from the synthesis is that management accounting mechanisms rarely operate in isolation. Rather than exerting direct effects alone, many studies demonstrate that their influence is transmitted through organizational capabilities. Across the reviewed articles, the most frequently identified mediating mechanisms include green innovation, dynamic capabilities, business strategy, organizational resilience, green human resource management, pricing capability, and organizational ambidexterity. These findings suggest that management accounting mechanisms primarily function as organizational capabilities that transform information into coordinated managerial actions, enabling organizations to innovate, adapt, and respond to sustainability challenges more effectively.

This empirical pattern is further reflected in the distribution of theoretical perspectives identified in the review. Resource-Based View (RBV) and its extensions including the Natural Resource-Based View, Dynamic Capability View, Knowledge-Based View, and Intellectual Capital-Based View constitute the dominant theoretical foundations across the reviewed studies. Collectively, these perspectives conceptualize management accounting mechanisms as strategic organizational resources that create value not merely through information provision but through their ability to develop organizational capabilities that support innovation, learning, adaptation, and long-term sustainability. This interpretation is also consistent with the broader literature on sustainability management accounting, which argues that management accounting has evolved into an integrated organizational system that links sustainability information with strategic decision-making and value creation (Schaltegger et al., 2022; Burritt et al., 2023; Christ et al., 2024).

Nevertheless, the synthesis also demonstrates that the effectiveness of management accounting mechanisms is not universal. Several studies report that their effects depend on complementary organizational conditions, including innovation capability, organizational culture, business strategy, stakeholder pressure, leadership, and different forms of management control. Moreover, a number of studies adopting Contingency Theory show that the effectiveness of management accounting mechanisms varies according to organizational and environmental characteristics, although environmental uncertainty itself is rarely operationalized as an empirical construct. Consequently, while the reviewed evidence consistently supports the role of management accounting mechanisms as enablers of organizational sustainability, it simultaneously suggests that their effectiveness depends on the extent to which these mechanisms are aligned with organizational capabilities and contextual conditions. This finding provides the basis for the following discussion concerning the underexplored role of environmental uncertainty as a contingency factor in the management accounting for sustainability literature.

### **Environmental Uncertainty Remains Under-Theorized**

The synthesis reveals that environmental uncertainty remains a relatively underdeveloped concept within the management accounting for sustainability literature.

Although 29 of the 40 reviewed studies acknowledge that organizations operate in dynamic environments characterized by technological change, regulatory developments, market competition, and evolving stakeholder expectations, these environmental conditions are predominantly treated as contextual background rather than as empirical constructs. Representative examples include studies by Wichitsathian and Ekkaphol (2026), Metwally and Hasanein (2026), Zraqat et al. (2026), Al-Nimer (2025), Pumiviset and Suttipun (2024), Phan et al. (2024), and Asiaei et al. (2023), all of which describe environmental dynamism as the setting in which management accounting mechanisms operate without incorporating environmental uncertainty into the research model. Furthermore, four studies do not address environmental uncertainty or related concepts at all, instead focusing exclusively on the direct relationship between management accounting mechanisms and sustainability-related organizational outcomes.

A smaller group of seven studies incorporates concepts that conceptually resemble environmental uncertainty, although under different terminologies. These include stakeholder pressure (Knels et al., 2025), environmental regulation (Antonini & Gomez-Conde, 2024), competitive forces intensity (Baird et al., 2024), business risk information (Lucyanda et al., 2025), environmental proactivity (Chetanraj et al., 2024), and structural and behavioral contingencies (Lhassan et al., 2025). Despite their conceptual similarities, these variables are examined independently rather than being integrated within a broader environmental uncertainty framework. Consequently, the literature remains fragmented, with different external conditions being investigated in isolation rather than as complementary dimensions of environmental uncertainty.

An additional observation emerging from the review is that these contingency-related variables generally function as external contextual factors that influence the effectiveness of management accounting mechanisms, including Environmental Management Accounting (EMA), Environmental Management Control Systems (EMCS), Strategic Management Accounting (SMA), and Management Accounting Practices (MAP). However, the reviewed studies rarely conceptualize these factors as manifestations of a broader construct of environmental uncertainty. Instead, they focus on individual sources of external pressure, such as regulation, competition, stakeholder demands, or environmental proactivity, without examining their combined influence on organizational decision-making. As a result, current research provides limited insight into how multiple dimensions of environmental uncertainty collectively shape the effectiveness of management accounting mechanisms.

The findings therefore reveal a significant conceptual gap in the existing literature. Although most studies recognize that organizations increasingly operate under uncertain and rapidly changing environmental conditions, none of the reviewed articles explicitly operationalizes environmental uncertainty as an empirical construct for example, by measuring managers' perceptions of environmental unpredictability, environmental dynamism, or market uncertainty. Consequently, the literature has primarily focused on whether EMA, SMA, MCS, PMS, EMCS, and related mechanisms improve sustainability-related organizational outcomes, while paying considerably less attention to when, why, and under what environmental conditions these mechanisms are most effective. This gap suggests an important direction for future research. Building on the contingency perspective, future studies should develop more comprehensive measures of environmental uncertainty and examine its role as a contingency factor that explains variations in the effectiveness of management accounting mechanisms in achieving sustainability-related organizational outcomes.

### **Toward an Integrated Conceptual Framework for Management Accounting for Sustainability**

The synthesis of the 40 reviewed articles reveals several recurring patterns that provide the foundation for developing an integrated conceptual framework for management accounting for sustainability. First, management accounting mechanisms including Environmental Management Accounting (EMA), Management Control Systems (MCS), Strategic Management Accounting (SMA), Performance Measurement Systems (PMS), Environmental Management Control Systems (EMCS), and Sustainability Management Control Systems (SMCS) consistently contribute to improving sustainability-related organizational outcomes across diverse organizational settings. This pattern is evident in studies examining EMA (Metwally & Hasanein, 2026; Sulanjaku & Shingjergji, 2026; Saputra et al., 2025; AlBalushi et al., 2025; Maulita et al., 2024; Chetanraj et al., 2024), MCS and EMCS (Monteiro et al., 2026; Silva et al., 2025; Farida & Setiawan, 2025; Knels et al., 2025; Antonini & Gomez-Conde, 2024; Phan et al., 2024), SMA (Wichitsathian & Ekkaphol, 2026; Zraquat et al., 2026; Al-Nimer, 2025; Raksudjarit et al., 2025; Pumiviset & Suttipun, 2024), PMS (Jiao et al., 2023; Asiaei et al., 2023; Alpenberg & Wnuk-Pel, 2022), and SMCS (Susana et al., 2026; Kurnianto & Tjahjadi, 2025). Collectively, these findings demonstrate that management accounting has evolved beyond its traditional financial control role into a strategic organizational mechanism that supports sustainability transformation.

A second recurring pattern concerns the mechanism through which management accounting contributes to organizational sustainability. Across the reviewed studies, management accounting mechanisms rarely influence sustainability outcomes directly. Instead, their effects are largely transmitted through the development of organizational capabilities, including green innovation (Metwally & Hasanein, 2026; Saputra et al., 2025; Farida & Setiawan, 2025; Maulita et al., 2024), dynamic capabilities (Silva et al., 2025; Le & Hoang, 2024), business strategy (Wichitsathian & Ekkaphol, 2026), green human resource management (Al-Nimer, 2025), organizational resilience (Phan et al., 2024), organizational ambidexterity (Monteiro et al., 2026; Al-Dhubaibi, 2025), pricing capability (Zraquat et al., 2026), and waste management (Latifah & Soewarno, 2023). These findings consistently suggest that management accounting mechanisms function not merely as information systems but as organizational capabilities that facilitate learning, coordination, innovation, and strategic decision-making. This interpretation is consistent with the dominance of Resource-Based View, Natural Resource-Based View, and Dynamic Capability Theory across the reviewed literature, which conceptualize management accounting as a strategic organizational resource whose value depends on its ability to build capabilities that support long-term sustainability.

A third pattern emerging from the synthesis concerns the influence of the external environment. Numerous studies acknowledge that organizations implement management accounting mechanisms within environments characterized by technological change, evolving regulations, increasing stakeholder expectations, competitive pressures, and market turbulence (e.g., Wichitsathian & Ekkaphol, 2026; Metwally & Hasanein, 2026; Al-Nimer, 2025; Pumiviset & Suttipun, 2024; Phan et al., 2024; Martins et al., 2023; Asiaei et al., 2023). However, these environmental conditions are predominantly treated as contextual background rather than as explanatory variables. Only a limited number of studies explicitly investigate contingency-related constructs, such as stakeholder pressure (Knels et al., 2025), environmental regulation (Antonini & Gomez-Conde, 2024), competitive forces intensity (Baird et al., 2024), business risk information (Lucyanda et al., 2025), environmental

proactivity (Chetanraj et al., 2024), and structural and behavioral contingencies (Lhassan et al., 2025). Nevertheless, these constructs are examined independently, resulting in fragmented explanations of how external environmental conditions influence the effectiveness of management accounting mechanisms.

Building on these recurring empirical patterns, this review proposes an integrated conceptual framework in which management accounting mechanisms constitute the primary organizational capability supporting sustainability-oriented decision-making. Their influence on sustainability-related organizational outcomes is expected to occur through complementary organizational capabilities, while environmental uncertainty functions as a higher-order contingency factor that shapes the effectiveness of these relationships. Rather than treating regulatory pressure, stakeholder pressure, competitive intensity, business risk, and environmental proactivity as isolated constructs, the proposed framework conceptualizes them as complementary manifestations of environmental uncertainty. Such an integrated perspective provides a more comprehensive explanation of why identical management accounting mechanisms may generate different sustainability outcomes across organizations operating in different environmental contexts. In doing so, the framework extends existing research by integrating previously fragmented streams of management accounting literature into a contingency-based explanation of organizational sustainability.

### **Implications for Future Research**

The first implication concerns the need to strengthen the role of environmental uncertainty within management accounting for sustainability research. The review demonstrates that most studies continue to focus on the direct effects of management accounting mechanisms on sustainability-related organizational outcomes, while environmental uncertainty is generally treated only as contextual background. Although several studies investigate external contingencies such as stakeholder pressure (Knels et al., 2025), environmental regulation (Antonini & Gomez-Conde, 2024), competitive forces (Baird et al., 2024), business risk (Lucyanda et al., 2025), environmental proactivity (Chetanraj et al., 2024), and institutional pressures (Maulita et al., 2024; Lutfi et al., 2024), these variables remain conceptually fragmented. Future research should therefore develop multidimensional measures of environmental uncertainty that integrate these various forms of external pressure into a single contingency construct capable of explaining when and under what conditions management accounting mechanisms are most effective.

The second implication relates to methodological development. The reviewed studies are dominated by cross-sectional survey designs employing PLS-SEM or covariance-based SEM (e.g., Metwally & Hasanein, 2026; Zraqat et al., 2026; Al-Nimer, 2025; Silva et al., 2025; Le & Hoang, 2024), whereas longitudinal studies (Antonini & Gomez-Conde, 2024), qualitative case studies (Agoudal et al., 2025; Alpenberg & Wnuk-Pel, 2022), mixed-methods research (Raksudjarit et al., 2025), and configurational approaches combining PLS-SEM with fsQCA (Monteiro et al., 2026; Silva et al., 2025; Lutfi et al., 2024) remain relatively limited. Expanding methodological diversity would enable future research to better explain the dynamic processes through which management accounting mechanisms evolve and adapt in response to changing environmental conditions.

Finally, future studies should adopt a more integrated perspective on management accounting mechanisms. The review shows that the literature is still dominated by EMA and MCS, whereas SMA, PMS, EMCS, and SMCS have received comparatively less empirical attention. Moreover, most studies investigate a single mechanism in isolation despite

consistent evidence that sustainability outcomes are typically generated through the interaction of multiple management accounting mechanisms with organizational capabilities such as green innovation, dynamic capabilities, organizational resilience, business strategy, and green human resource management. Future research should therefore develop integrated models that simultaneously examine multiple management accounting mechanisms and organizational capabilities to provide a more comprehensive explanation of how management accounting supports organizational sustainability under conditions of environmental uncertainty.

#### **4. Conclusion**

This study conducted a systematic literature review of 40 articles examining the relationship between management accounting mechanisms and sustainability-related organizational outcomes. The synthesis reveals that research published between 2020 and 2026 has been dominated by Environmental Management Accounting (EMA) and Management Control Systems (MCS), followed by Strategic Management Accounting (SMA), Performance Measurement Systems (PMS), Environmental Management Control Systems (EMCS), and Sustainability Management Control Systems (SMCS). Across the reviewed studies, these mechanisms consistently contribute to enhancing organizational sustainability, either directly or indirectly through the development of organizational capabilities such as green innovation, dynamic capabilities, organizational resilience, business strategy, and green human resource management. Nevertheless, the review also indicates that the existing literature has primarily focused on the direct relationship between management accounting mechanisms and sustainability performance, while paying comparatively less attention to the contextual conditions that influence the effectiveness of these relationships.

The principal contribution of this review lies in identifying a conceptual gap concerning the role of environmental uncertainty in the management accounting for sustainability literature. Although most studies acknowledge the influence of regulatory changes, market dynamics, stakeholder pressures, and technological developments, these factors are generally treated only as contextual background rather than being operationalized as empirical constructs. Based on these findings, this study proposes a conceptual framework that integrates management accounting mechanisms, organizational capabilities, environmental uncertainty, and sustainability-related organizational outcomes. This framework advances the current understanding by suggesting that management accounting mechanisms serve not only as information systems that support decision-making but also as strategic organizational capabilities whose effectiveness depends on their alignment with the organization's external environment.

This study has several limitations that should be acknowledged. First, the review was limited to articles indexed in the Scopus database, and therefore relevant publications indexed elsewhere were not included. Second, the synthesis focused exclusively on English-language articles that satisfied the predefined inclusion criteria, meaning that some relevant studies may not have been identified. Third, the proposed conceptual framework remains theoretical and requires empirical validation across different organizational sectors and institutional contexts. Despite these limitations, the findings provide a valuable foundation for advancing both the theory and practice of management accounting for sustainability and offer a clearer research agenda for integrating environmental uncertainty into future studies of sustainability-oriented management accounting. For future researchers, several directions can be pursued. First, future studies should examine environmental uncertainty as an explicit

empirical construct rather than merely treating regulatory changes, technological developments, market dynamics, and stakeholder pressures as contextual conditions. Developing and validating multidimensional measures of environmental uncertainty would strengthen understanding of how different types of uncertainty influence the effectiveness of management accounting mechanisms. Second, future research could investigate whether environmental uncertainty moderates the relationships between management accounting mechanisms, organizational capabilities, and sustainability-related outcomes.

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