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**DEVELOPING AN ESG-BASED BALANCED SCORECARD METHODOLOGY  
FOR STRATEGIC MANAGEMENT ACCOUNTING**

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The increasing significance of environmental, social, and governance (ESG) factors is changing the requirements for contemporary strategic management and performance measurement. Organizations are increasingly evaluated not only according to profitability and financial growth but also according to their environmental impact, treatment of employees and other stakeholders, governance quality, risk management, transparency, and long-term value creation. This development creates a need for management accounting systems capable of incorporating ESG information into strategic planning, performance evaluation, resource allocation, and managerial decision-making. Consequently, Strategic Management Accounting (SMA) is increasingly expected to provide forward-looking financial and non-financial information that supports both economic and sustainability objectives.

Recent research confirms the growing relationship between sustainability and management accounting. Cheng, Perego, and Soderstrom (2023) identify ESG, sustainability, performance measurement systems, incentives, corporate governance, carbon accounting, and integrated reporting as important areas of contemporary management accounting research. They emphasize that sustainability-related information should be considered in relation to performance measurement, organizational structures, incentives, and management control rather than being viewed exclusively as an external reporting issue.

The Balanced Scorecard (BSC) provides a potentially appropriate framework for this integration because it connects strategic objectives with financial and non-financial performance measures. Contemporary research demonstrates that BSC scholarship has developed substantially toward strategic performance management, integrated reporting, sustainable development, and systems thinking. Kumar et al. (2024), based on a systematic and bibliometric analysis of 1,294 BSC-related studies, identify sustainability and Sustainability Balanced Scorecards among the increasingly important directions of contemporary BSC research.

However, conventional BSC structures do not automatically provide an adequate methodology for measuring ESG performance. ESG issues are multidimensional, interconnected, and often characterized by different time horizons and stakeholders. Environmental improvements may generate financial benefits only in the long term, while social and governance outcomes may influence organizational reputation, risk, employee

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performance, and stakeholder trust. Therefore, simply adding ESG indicators to an existing BSC may create a collection of measures without a coherent strategic relationship.

Recent research on Sustainability Balanced Scorecards provides an important foundation for addressing this problem. Mio, Costantini, and Panfilo (2022) systematically reviewed 65 articles on SBSC use and identified the SBSC as a performance measurement and management control instrument capable of supporting sustainability objectives. Their findings emphasize the importance of the design, implementation, use, and evolution of sustainability-oriented performance systems.

More recent research by Michalski (2024) directly examines the operationalization of an ESG-integrated strategy through the BSC in FMCG companies. The study demonstrates how ESG objectives can be translated into measurable strategic and operational targets within the BSC framework. Chehimi and Naro (2024), through a systematic literature review, similarly demonstrate the potential of BSC and SBSC approaches for strategic alignment of sustainability and corporate social responsibility. At the same time, they argue that conventional scorecard approaches may struggle to represent the full complexity of sustainability challenges.

Accordingly, the purpose of this research is to develop an ESG-based Balanced Scorecard methodology for Strategic Management Accounting. The study focuses on integrating environmental, social, and governance indicators with strategic objectives, financial outcomes, operational performance, and managerial decision-making. The proposed methodology seeks to move beyond the simple addition of ESG indicators and establish a coherent system of strategic alignment, indicator prioritization, causal relationships, and continuous evaluation.

Recent academic literature demonstrates that the integration of sustainability into performance measurement has become an important area of management accounting research. Mio et al. (2022) show that the SBSC can function as a management control mechanism that supports sustainability-oriented decision-making. Their systematic review demonstrates that the use of sustainability performance measures is influenced by organizational conditions and by the manner in which performance information is incorporated into management processes.

Cheng et al. (2023) further emphasize that sustainability and ESG research should be connected with management accounting and management control systems. Their analysis highlights relationships between performance measurement systems, incentives, organizational structure, corporate governance, carbon accounting, and integrated reporting. This perspective is particularly relevant to the present study because an ESG-based BSC should provide information that can be used internally for strategic management rather than merely for external disclosure.

The development of BSC research also supports this approach. Kumar et al. (2024) reviewed 1,294 BSC-related studies and identified strategic performance management, integrated reporting, sustainable development, and systems thinking among major research themes. Their findings indicate that the BSC has evolved from a multidimensional



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performance measurement framework into a broader strategic management instrument. Sustainability-oriented BSC research has consequently become increasingly important as organizations seek to incorporate environmental and social objectives into corporate strategy.

Mio et al. (2022) provide evidence that sustainability-oriented scorecards can contribute to sustainability control and management. Their systematic review is particularly significant because it considers the actual use of the SBSC rather than focusing only on its theoretical construction. The authors identify the determinants of SBSC use and examine the outcomes generated by sustainability-oriented performance measurement.

Michalski (2024) extends this research by examining the operationalization of ESG-integrated corporate strategy through the BSC. His study demonstrates the practical possibility of integrating ESG metrics with traditional financial, customer, internal-process, and learning-and-growth perspectives. This provides direct methodological support for the present research because it demonstrates that ESG objectives can be translated into operational performance targets within a BSC structure.

Chehimi and Naro (2024) provide a more critical perspective. Their systematic review confirms that BSC and SBSC frameworks can help organizations align sustainability and corporate social responsibility with business strategy, but they also question whether organizational performance measurement systems can fully capture the complexity of sustainability. This observation indicates that the development of an ESG-based BSC requires more than simply adding environmental and social measures to existing perspectives.

The literature therefore suggests that an effective ESG-based BSC should incorporate at least five methodological requirements: strategic alignment, ESG materiality, causal integration, indicator prioritization, and continuous adaptation. These principles provide the conceptual foundation for the methodology proposed in this study.

The results of the study indicate that ESG performance should be integrated into Strategic Management Accounting through a systematic process beginning with organizational strategy. First, strategic priorities and material ESG issues should be identified. Second, ESG objectives should be translated into measurable indicators. Third, these indicators should be connected with the four BSC perspectives and with expected organizational outcomes. Finally, targets, responsibilities, reporting procedures, and review mechanisms should be established.

The proposed methodology distinguishes among environmental, social, and governance indicators while recognizing their interdependence. Environmental indicators may include greenhouse-gas emissions, energy consumption, renewable-energy utilization, water consumption, waste generation, recycling rates, resource efficiency, and environmental compliance. Social indicators may include employee safety, employee turnover, employee development, diversity, working conditions, customer responsibility, employee satisfaction, and community engagement. Governance indicators may include



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board effectiveness, ethical compliance, anti-corruption practices, risk management, internal control, transparency, data governance, and stakeholder accountability.

The financial perspective should incorporate the economic consequences of ESG performance. Relevant measures may include ESG-related cost savings, return on sustainability investments, operating-cost reductions, revenue from sustainable products, profitability, risk-adjusted returns, and financial impacts of environmental or social risks. This allows ESG performance to be considered in relation to economic value rather than as a separate reporting category.

The customer perspective should capture how ESG performance influences customer value and stakeholder perceptions. Possible indicators include customer satisfaction, customer retention, trust, reputation, sustainable-product demand, responsible sourcing expectations, and customer complaints. Strong ESG performance may increase customer trust and strengthen competitive positioning, while poor performance may generate reputational and commercial risks.

The internal-process perspective should focus on the organizational processes through which ESG objectives are achieved. Relevant indicators may include emissions intensity, energy efficiency, waste reduction, supply-chain sustainability, occupational accidents, process compliance, responsible procurement, and resource productivity. These measures provide management with information concerning the operational drivers of ESG and financial performance.

The learning and growth perspective should address the organizational capabilities required to achieve ESG objectives. Indicators may include employee ESG training, sustainability competencies, innovation, technological capabilities, ESG awareness, employee engagement, and organizational learning. This perspective is important because sustainable performance depends not only on current operational processes but also on the organization's ability to develop future capabilities.

A major result of the proposed methodology is that ESG indicators should not be selected according to availability alone. Organizations increasingly possess large quantities of sustainability data, but excessive measurement can reduce managerial attention and create information overload. Therefore, each indicator should be evaluated according to strategic relevance, materiality, measurability, reliability, controllability, stakeholder importance, and expected contribution to organizational performance.

This approach is supported by the recent BSC literature. Kumar et al. (2024) emphasize the development of BSC research toward strategic performance management and systems thinking, while Michalski (2024) demonstrates the practical integration of ESG targets into BSC-based strategy implementation.

The findings further demonstrate the importance of causal integration. ESG indicators should be connected to one another and to organizational outcomes through explicit strategic relationships. For example, employee safety programs can reduce workplace accidents and absenteeism, which can improve productivity and reduce costs. Energy-efficiency initiatives can reduce resource consumption and operating expenses



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while simultaneously improving environmental performance. Effective governance and internal controls can reduce compliance failures and reputational risks and consequently protect long-term financial performance.

Such relationships allow management accountants to move from descriptive ESG reporting toward explanatory performance analysis. Instead of simply reporting that emissions have decreased, managers can investigate whether the reduction resulted from improved energy efficiency, technological investment, production changes, or other operational factors. This increases the decision-usefulness of ESG information.

The proposed methodology also emphasizes the distinction between leading and lagging indicators. Financial performance, profitability, and shareholder value generally represent outcomes, whereas emissions intensity, employee turnover, safety incidents, employee competencies, governance compliance, and energy efficiency can provide information about future performance. Integrating both types of indicators allows management to evaluate current results while monitoring the drivers of future performance.

This perspective is particularly relevant to Strategic Management Accounting because ESG information can be incorporated into budgeting, investment analysis, strategic costing, risk management, resource allocation, and performance evaluation. Cheng et al. (2023) emphasize the importance of understanding sustainability through the interaction of performance measurement, incentives, organizational structures, and governance. Thus, an ESG-based BSC should be connected with the wider management control system rather than operate independently.

The results also indicate that ESG materiality should be organization-specific. The importance of individual ESG indicators differs across industries, business models, geographic markets, and stakeholder groups. For a manufacturing enterprise, energy consumption, emissions, waste, occupational safety, and supply-chain practices may be highly material. For a financial institution, governance, data security, responsible lending, employee practices, and climate-related financial risks may be more significant. Consequently, the methodology should provide a standardized structure while allowing organization-specific indicators.

The study also identifies the need for continuous adaptation. ESG priorities are not static. Changes in regulation, technology, customer expectations, investor requirements, environmental conditions, and organizational strategy may change the relevance of individual indicators. Therefore, the ESG-based BSC should be reviewed periodically. Indicators may be retained, modified, replaced, or eliminated according to their continued strategic relevance.

Another finding concerns organizational implementation. ESG performance crosses functional and departmental boundaries. Effective implementation therefore requires cooperation between management accountants, sustainability specialists, financial managers, operational managers, human-resource specialists, risk managers, and senior executives. Management accountants can play an important coordinating role because they



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possess expertise in measurement, budgeting, performance analysis, and decision-support systems.

The proposed framework consequently differs from a conventional BSC by treating ESG as an integrated strategic dimension rather than as an additional group of non-financial indicators. The objective is not to create a separate ESG reporting system but to incorporate material ESG factors into the strategic architecture of management accounting.

This approach also addresses the limitation identified by Chehimi and Naro (2024). Their systematic review shows that although SBSCs can contribute to strategic alignment, conventional organizational performance measurement frameworks may struggle to capture the broader complexity of sustainability. Therefore, an ESG-based BSC should recognize that some ESG outcomes extend beyond immediate organizational boundaries and financial objectives.

The overall methodological model developed in this study consists of five interconnected stages. The first stage is strategic and ESG diagnosis, in which organizational strategy, stakeholder expectations, risks, and material ESG issues are identified. The second stage is indicator development, in which measurable environmental, social, governance, financial, customer, process, and capability indicators are selected. The third stage is strategic mapping, in which cause-and-effect relationships among indicators and objectives are established. The fourth stage is prioritization and target setting, in which indicators are weighted according to strategic importance and measurable targets are established. The fifth stage is monitoring and adaptation, through which ESG indicators are periodically reviewed and modified.

The main contribution of this methodology is therefore the systematic integration of ESG information into the strategic management accounting architecture. Instead of treating ESG performance as an independent reporting requirement, organizations can use ESG indicators as part of strategic analysis and decision-making. This strengthens the forward-looking character of management accounting and allows managers to consider long-term environmental, social, governance, and financial consequences simultaneously.

The study has several limitations. The proposed methodology is primarily conceptual and requires empirical validation in specific industries and organizational contexts. The availability and reliability of ESG data may differ substantially among organizations. In addition, causal relationships between ESG indicators and financial outcomes may be difficult to establish because some effects occur over long periods and are influenced by external factors. Future research should therefore test the methodology using longitudinal organizational data and examine whether ESG-based BSC implementation improves strategic alignment, managerial decision-making, and organizational performance.

In conclusion, the study demonstrates that developing an ESG-based Balanced Scorecard methodology can strengthen Strategic Management Accounting by integrating environmental, social, governance, financial, customer, process, and organizational capability information within a unified strategic framework. Recent research by Mio et al.



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(2022), Cheng et al. (2023), Kumar et al. (2024), Chehimi and Naro (2024), and Michalski (2024) demonstrates the growing importance of sustainability, ESG, management control, and BSC integration in contemporary organizational performance management.

The research concludes that ESG indicators should not be incorporated into the BSC simply by increasing the number of performance measures. Their value depends on strategic relevance, materiality, reliability, causal connectivity, and usefulness for managerial decisions. The proposed methodology therefore emphasizes five principles: strategic alignment, ESG materiality, causal integration, indicator prioritization, and continuous adaptation.

The methodology transforms ESG information from a predominantly reporting-oriented resource into strategically useful management accounting information. By linking ESG indicators with financial outcomes, customer value, internal processes, and organizational capabilities, the ESG-based BSC can provide a more comprehensive representation of organizational performance and support long-term value creation.

Overall, the proposed ESG-based Balanced Scorecard methodology provides a foundation for integrating sustainability considerations into Strategic Management Accounting. Its implementation can improve strategic alignment, strengthen ESG-related decision-making, support risk management, enhance management control, and contribute to sustainable long-term organizational performance.

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