Implications of Environmental Accounting Practices on Sustainable Value Creation through the Mediator Role of Responsive Environmental Dynamism

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Abstract

Traditional business reporting has focused on economic metrics for decades, often neglecting environmental and societal considerations. This study addresses this gap by investigating the implications of ecological accounting practices in creating a sustainable value that integrates environmental, economic, and societal dimensions. It incorporates the Theory of Planned Behavior to explore the factors influencing the adoption of environmental accounting practices and examines the role of Responsive Environmental Dynamism (RED) as a mediator in this relationship. The research employs a measurement model encompassing various aspects of environmental accounting, including environmental management accounting, cost accounting, external reporting practices, auditing practices, accounting information systems, and reporting responsibilities. Data were collected via a self-administered Likert scale questionnaire distributed to accounting practitioners using a snowball sampling technique. A total of 122 responses were analyzed through Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicate that environmental accounting practices significantly impact sustainable value creation, with RED serving as a significant moderating variable. Notably, environmental external reporting and environmental auditing practices are identified as major contributors to sustainable value creation. The study underscores the need for businesses to integrate environmental accounting practices into their financial reporting frameworks to enhance long-term economic benefits, ensure legitimacy, and improve resource efficiency. This research contributes to the development of environmental accounting theory and practice, addressing existing deficiencies and fragmentation in the literature.

Keywords: Environmental Accounting Practices, Responsive Environmental Dynamism , Sustainable Value.

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Introduction

The escalating costs of environmental damage, driven by climate change and greenhouse gas emissions, have placed significant pressure on businesses to adopt sustainable practices. Human activities such as deforestation, pollution, and carbon emissions remain primary contributors to environmental challenges (Ismail, Ramli, & Darus, 2014). Businesses, as pivotal economic actors, contribute both directly and indirectly to ecosystem degradation and societal burdens (Bonvoisin, Stark, & Seliger, 2017; Anh, Soa, & Hanh, 2020). Consequently, society increasingly holds companies accountable for addressing environmental issues, irrespective of their size or sector. Stakeholders now demand that businesses actively contribute to environmental sustainability while managing risks associated with scarce, complex, and technology-dependent information (Nartey & van der Poll, 2021).

These rising environmental concerns have significantly influenced the accounting profession (Gray, 2010; Lehman, 2002). In response, environmental accounting systems have emerged as critical tools for quantifying, reporting, and managing environmental impacts. These systems encompass various dimensions, including green accounting, energy accounting, carbon accounting, and resource usage accounting, which collectively aim to improve transparency and accountability (Fakoya & Lawal, 2020).

Beyond external reporting, environmental accounting plays a pivotal role in internal decision-making processes. Research highlights its potential to influence product pricing, capital budgeting, and cost management, thereby fostering sustainable value creation (Bartolomeo et al., 2000; Burritt & Schaltegger, 2010). Despite this, existing literature provides limited insights into how organizations operationalize environmental accounting frameworks to align with sustainable development objectives. Scholars like Georg and Justesen (2017) argue that more attention is needed to understand the practical implementation and effectiveness of these frameworks, particularly in emerging economies.

The concept of sustainable value creation has become a focal point in environmental management discussions. It aligns with the United Nations' definition of sustainable development as "development that meets the needs of the present without jeopardizing future generations' ability to meet their own needs" (Brundtland, 1987). This definition emphasizes the interconnectedness of environmental, economic, and social pillars (Redclift, 1992). While environmental accounting is recognized as a critical enabler of sustainable development, inconsistent regulations, policies, and standards continue to hinder its adoption (Ngwakwe, 2012). Addressing these challenges requires innovative approaches, including the development of green accounting practices and carbon footprint accounting (Ngwakwe, 2012).

Additionally, the strategic importance of environmental management practices cannot be overstated. Länsiluoto and Järvenpää (2010) highlight that addressing environmental concerns can significantly enhance a company's image, competitiveness, profitability, and market share, all of which are integral to sustainable value creation. Soriano, Muñoz-Torres, and Chalmeta (2010) further emphasize the need for managerial responsibility across all hierarchical levels to develop strategic measures for assessing progress in sustainability. These perspectives underscore the

necessity of integrating environmental considerations into organizational structures and control systems (Figge et al., 2002).

This study addresses two critical gaps in the literature. First, while numerous studies have examined the benefits of environmental accounting practices (e.g., Brooks & Oikonomou, 2017), most focus on developed economies, leaving significant gaps in understanding their applicability in emerging markets like Sri Lanka. Second, limited research explores how environmental accounting practices interact with external environmental dynamism to influence sustainable value creation. This study seeks to fill these gaps by investigating the perceptions of managerial-level accounting practitioners regarding the implementation of environmental accounting practices in Sri Lanka.

The theoretical foundation of this research is based on stakeholder theory and dynamic capability theory. Stakeholder theory highlights the importance of balancing organizational goals with societal and environmental responsibilities under increasing stakeholder scrutiny (Freeman & Phillips, 2002). Dynamic capability theory, meanwhile, emphasizes the need for adaptability and responsiveness in volatile environments, providing a lens to explore the mediating role of Responsive Environmental Dynamism in sustainable value creation (Teece, Pisano, & Shuen, 1997).

Accordingly, the study is guided by the following research objectives:

- To evaluate the impact of environmental accounting practices on sustainable value creation.
- To analyze the mediating role of Responsive Environmental Dynamism in strengthening the relationship between environmental accounting practices and sustainable value creation.

This research makes several contributions. First, it enhances the understanding of how environmental accounting practices can be leveraged to achieve sustainability goals in resource-constrained settings. Second, it explores the strategic role of environmental dynamism, offering insights into how organizations can adapt to external pressures while maintaining sustainability and competitiveness.

By addressing these objectives, this study aims to provide actionable insights for accounting practitioners and policymakers in emerging economies, positioning environmental accounting not merely as a compliance mechanism but as a strategic tool for fostering sustainability and organizational resilience.

Theoretical Framework

Legitimacy Theory

Legitimacy theory, rooted in Parsons' (1960) conceptualization of legitimacy, evaluates behavior based on the alignment of shared values within a particular social context. Parsons defined legitimacy as the congruence between an organization's value system and the broader societal value system (Parsons, 1960, p. 175). This theory posits that organizations do not possess

an inherent right to operate within society; rather, their continued existence is contingent upon providing societal benefits that outweigh social costs (Mousa & Hassan, 2015). In this context, the theory emphasizes that societal approval is essential for organizational survival.

Accounting practices play a crucial role in facilitating the relationship between organizations and society, serving as a primary means of communication through annual reports (Buhr, 1998). These reports are widely recognized as legitimate mechanisms for reflecting a firm's activities and their alignment with societal expectations (Abrahamson & Park, 1994). However, Gray (2001) critiques this view by arguing that traditional accounting practices predominantly capture transactions and events with economic value, thereby neglecting those aspects of organizational behavior that do not have an agreed market value. This focus on purely financial aspects undermines the broader purpose of financial reporting, which should encompass a wider array of social and environmental factors to truly reflect organizational legitimacy.

Theory of Planned Behaviour (TBP)

The Theory of Planned Behavior (TPB) is a psychological framework that connects beliefs to behavior, making it particularly relevant to the study of environmental accounting (EA) practices. TPB suggests that managers' intentions toward a particular practice are influenced by factors such as industry norms, regulatory policies, and the perceived benefits versus costs and complexities associated with the practice (Chuanmin et al., 2018; Thoradeniya et al., 2015). In the context of EA, managers are more likely to develop positive behavioral intentions toward practices that offer significant benefits at a relatively low cost and complexity. Conversely, practices perceived as high-cost and low-benefit are less likely to gain managerial support.

By integrating TPB into the analysis of EA practices, this study seeks to understand the factors that shape managerial attitudes and intentions. The theory offers insights into how external pressures, perceived advantages, and the simplicity or complexity of EA practices can influence their adoption and implementation within organizations.

Literature Review

Environmental Accounting Practices

Conventional accounting systems have historically neglected the integration of environmental considerations, leading to criticism for their lack of systematic approaches and limited capacity to address sustainability challenges (Gray, 2013). Ascui and Lovell (2012) emphasized that these limitations are particularly pronounced in addressing environmental rights and liabilities. Furthermore, traditional accounting systems have overlooked the scarcity of natural resources (Mather & Chapman, 2018) and failed to meet the evolving expectations of diverse stakeholders (Odoemelam & Okafor, 2018). These challenges have catalyzed the emergence of environmental accounting practices designed to integrate sustainability into business strategies and reporting frameworks.

Environmental accounting encompasses various practices designed to align organizational objectives with environmental sustainability goals. Key practices include environmental management accounting, which integrates environmental and financial data to support internal

decision-making and resource optimization (Brundtland, 1987; IFAC, 2005). Cost accounting plays a crucial role in quantifying environmental costs, such as pollution control expenses and waste disposal, enabling organizations to allocate resources efficiently and enhance cost-effectiveness. External reporting practices, including sustainability and environmental disclosures, ensure transparency and accountability, meeting the expectations of stakeholders and regulatory bodies (Soonawalla, 2006). Furthermore, auditing practices provide assurance of the accuracy and reliability of environmental reports, reinforcing stakeholder confidence and compliance with environmental standards (IFAC, 2005). Advanced accounting information systems are pivotal in managing and processing complex environmental data, while clear reporting responsibilities establish accountability across organizational levels, promoting cohesive efforts toward sustainability (Soonawalla, 2006).

Environmental accounting seeks to quantify, measure, and communicate the economic impacts of an organization's interaction with the environment (Nicholls, 2020). It addresses costs associated with site remediation, environmental penalties, pollution prevention technologies, and waste management (Deegan, 2013). These practices enable organizations to produce evidence-based reports for strategic decision-making, cost analysis, and risk management (CIMA, 2014). They facilitate scenario analysis and projections, ensuring alignment between business objectives and environmental considerations (Nartey & van der Poll, 2021). As outlined by the International Federation of Accountants (IFAC, 2005), environmental accounting involves the systematic generation, collection, and analysis of financial and non-financial information concerning resource utilization and environmental impacts. Practices such as life cycle assessments, material and energy flows, and environmental capital impacts (Burritt, Hahn, & Schaltegger, 2002) are integral to this framework, alongside emerging areas like carbon accounting and biodiversity reporting (Soonawalla, 2006; IFAC, 2005). Through these practices, environmental accounting operationalizes sustainability, supporting informed decision-making and strategic alignment with environmental goals.

Environmental Accounting and Sustainable Value Creation

Sustainable value creation integrates environmental, social, and economic performance into business operations (Hristov, Chirico & Appolloni, 2019). Labuschagne, Brent, and Erck (2005) argue that sustainable value encompasses economic efficiency, social equity, and environmental sustainability. Environmental accounting plays a pivotal role in achieving this integration by embedding environmental metrics into organizational performance assessments.

Sustainable value is a multidimensional concept integrating environmental, social, and economic benefits to create long-term value for organizations and society. Environmental value arises from practices such as reducing greenhouse gas (GHG) emissions, conserving natural resources, adapting to climate change, and enhancing eco-efficiency in products and processes. These efforts align business activities with environmental sustainability goals, fostering a green and circular economy (Laurell et al., 2018; Harbi et al., 2015). Social value is generated by empowering communities through improved living standards, health and safety measures, robust community networks, and consistent, long-term development initiatives (Ranganathan, 1998; Vinnari & Vinnari, 2014). Lastly, economic value emerges from cost savings, enhanced

operational functionality, competitive advantages, and strengthened brand value, illustrating how environmental accounting practices contribute to economic sustainability (Afonso & Jalles, 2011; Laurell et al., 2018).

Economic value creation is measured through metrics like organizational assets, liabilities, and market strength (Afonso & Jalles, 2011; D'amato & Korhonen, 2021). Social value creation focuses on aspects such as community engagement, employment quality, and ethical sourcing (D'amato & Korhonen, 2021; Ranganathan, 1998). Environmental value creation includes measures such as energy consumption, waste management, and material usage, aligning business practices with broader environmental objectives (D'amato & Korhonen, 2021; Hamann et al., 2017). By integrating environmental, social, and economic values, organizations can operationalize sustainability, enabling a balanced approach to addressing global challenges while securing competitive advantages and fostering community well-being. Environmental reporting frameworks, such as those proposed by the Global Reporting Initiative (GRI), have emphasized the integration of environmental information into corporate reporting (Adams & Simnett, 2011). These frameworks aim to align corporate activities with global sustainability goals (Almagtome et al., 2020). Hahn and Kühnen (2013) underscore the benefits of adopting these practices, including enhanced reputation, brand value, and competitive advantage. However, the challenge of "greenwashing" remains a concern, with some organizations prioritizing image over genuine sustainability efforts (Burritt & Schaltegger, 2010; Yoganandham, 2024).

Environmental Dynamism and Sustainable Value Creation

Environmental dynamism plays a pivotal role in bridging organizational resources with evolving external conditions (Kang, Chaivirutnukul, & Zeng, 2023). Environmental dynamism defined as the rate of change and unpredictability in an organization's environment (Li & Liu, 2014), it influences firms' responsiveness to market demands and competitive pressures. In dynamic environments, businesses must demonstrate adaptability to changing consumer demands, regulatory frameworks, and competitive pressures (Agu, 2024; Jiao, Alon, & Cui, 2011; Hitt, Keats, & DeMarie, 1998). Andrews (1971) and Drnevich and Kriauciunas (2011) underscored the importance of aligning internal mechanisms with external volatility to achieve organizational resilience. Petrus (2019) noted that organizations equipped with dynamic capabilities are better positioned to adapt and innovate in response to environmental instability.

Hamann et al. (2017) framed sustainable value creation as a multidimensional construct encompassing economic, social, and environmental value. While economic efficiency evaluates market strength and financial health (Afonso & Jalles, 2011), social value creation considers community engagement and ethical sourcing (Ranganathan, 1998). Environmental value is measured by indicators like energy consumption and waste disposal, demonstrating the integrative nature of sustainability efforts (Labuschagne, Brent, & Erck, 2005). Environmental dynamism enhances this multidimensional construct by fostering adaptability to changing external conditions, enabling organizations to align their sustainability practices (Do et al., 2022; Liboni, 2023). By navigating these dynamic environmental factors, organizations can strengthen their ability to create sustainable value across all dimensions, ensuring resilience and relevance in the pursuit of long-term sustainability goals.

Hypothesis Development

Environmental dynamism enhances the efficacy of environmental accounting practices by aligning them with external environmental changes (Yu, 2022). The integration of dynamic environmental factors allows organizations to leverage environmental accounting for strategic decision-making, thereby fostering sustainable value creation (Alshukri, 2024). For instance, by incorporating environmental performance metrics into financial reporting, organizations can better navigate volatile market conditions and regulatory uncertainties (Jiao, Alon, & Cui, 2011).

Li and Liu (2014) argue that environmental dynamism facilitates the alignment of organizational resources with changing environmental demands, enhancing the relevance and applicability of environmental accounting practices. This mediating role underscores the importance of adaptive strategies in achieving long-term sustainability goals.

Accordingly, the First hypothesis investigates whether environmental dynamism mediates the relationship between environmental accounting practices and sustainable value creation. This hypothesis, which examines an indirect relationship, is divided into two parts: H1 explores the relationship between Environmental Accounting Practices (EAP) and Responsive Environmental Dynamism (RED), while H2 investigates the relationship between Responsive Environmental Dynamism (RED) and Sustainable Value Creation (SVC). This division supports the analysis within the Path Coefficient Model.

The adoption of environmental accounting practices significantly impacts the three dimensions of sustainable value creation: economic, social, and environmental performance (Solovida & Latan, 2021). . Economic performance is enhanced through cost optimization and resource efficiency, as organizations incorporate environmental considerations into budgeting and capital planning (IFAC, 2005). Social performance is improved through transparency and stakeholder engagement, fostering trust and accountability (Ranganathan, 1998). Environmental performance benefits from systematic reporting and measurement, which enable organizations to minimize resource consumption and waste generation (Deegan, 2013).

Ying et al. (2011) emphasize the global significance of environmental sustainability in addressing issues such as biodiversity loss and resource depletion. The integration of environmental accounting practices into corporate strategies enables organizations to align their operations with sustainable development objectives, thereby enhancing overall performance (Asiaei, 2022).

H3: Environmental Accounting Practices (EAP) positively influence Sustainable Value Creation (SVC)

Methodology

Research Design

The study adopts a confirmatory research design, as it aims to validate and empirically test the relationships between environmental accounting practices (EAP), responsive environmental

dynamism (RED), and sustainable value creation (SVC). A confirmatory approach is appropriate in this context, as it seeks to build upon and verify theoretical propositions and existing frameworks related to environmental reporting practices within Sri Lankan manufacturing organizations, particularly in the consumer services sector. By rigorously examining these constructs, the study provides critical insights into the practical applications of environmental accounting in Sri Lanka, where sustainable value creation is an increasingly vital concern.

A total of 122 managerial-level accounting practitioners from manufacturing organizations listed under the consumer services category of the Colombo Stock Exchange (CSE) were selected as the sample for this study. The snowball sampling technique, a non-probability method, was employed to identify relevant participants. This technique is particularly effective in confirmatory research, as it allows researchers to connect with an initial set of participants who then refer others within their professional networks. This method was ideal for targeting practitioners who are directly involved in decision-making processes regarding environmental accounting and reporting practices. While snowball sampling can lead to smaller sample sizes, it ensures the relevance of participants to the research question (Oribhabor & Anyanwu, 2019). Additionally, prior studies in environmental accounting and sustainability reporting often use sample sizes in the range of 100 to 150 respondents (Chang et al., 2021; Cirule & Uvarova, 2022; Kapsalis & Rosén, 2022), making 122 both practical and consistent with established research norms for drawing meaningful conclusions.

A self-administered Likert scale questionnaire was developed to measure the key constructs of EAP, RED, and SVC. The development of the questionnaire followed a rigorous process to ensure it was both comprehensive and aligned with the theoretical framework established through the literature review. The items related to environmental accounting practices were based on prior work that explored various aspects of environmental management accounting, cost accounting, external reporting practices, auditing practices, and accounting information systems (Brundtland, 1987; IFAC, 2005; Soonawalla, 2006). These items were designed to assess the adoption and implementation of these practices in the context of environmental sustainability.

The construct of responsive environmental dynamism (RED) was operationalized using items designed to measure an organization's ability to adapt to changes in the external environment, particularly those related to environmental factors. The items were based on established definitions of environmental dynamism, drawing on the work of Andrews (1971), Li and Liu (2014), and Drnevich and Kriauciunas (2011). These items capture the responsiveness of organizations to environmental changes and uncertainties, which is central to understanding how environmental accounting practices can lead to sustainable value creation.

Sustainable value creation (SVC) was measured through three dimensions: economic sustainability, environmental sustainability, and social sustainability. These dimensions were drawn from the United Nations' Sustainable Development Goals (SDGs) and were conceptualized to reflect the creation of value in economic, environmental, and social terms. Economic sustainability was operationalized through the idea of enabling a green-circular economy, environmental sustainability through empowering communities and improving living standards, and social sustainability by creating a competitive economic advantage. This

conceptualization aligns with the broader understanding of sustainability, integrating economic, environmental, and social aspects into a holistic framework for measuring sustainable value creation.

The questionnaire was divided into three sections. The first section gathered demographic information, such as the respondents' role, industry experience, and organizational size. The second section included items to measure EAP and RED, with specific statements designed to reflect key organizational practices and responses. The third section was dedicated to assessing SVC, with items that focused on the economic, environmental, and social aspects of sustainability. These items were carefully designed to ensure they were clear, concise, and relevant to the study's objectives.

To ensure the validity and reliability of the questionnaire, several steps were taken. Content validity was established through an extensive review of the relevant literature, which helped refine the questionnaire items and ensured they accurately captured the key constructs. Expert consultations were also conducted to further refine the content and structure of the questionnaire. For construct validity, PLS-SEM was used to assess convergent and discriminant validity. Convergent validity ensures that the items intended to measure the same construct are correlated, while discriminant validity ensures that the constructs themselves are distinct. These measures of validity ensure that the questionnaire accurately reflects the theoretical framework and that the results of the study are meaningful.

A total of 122 valid responses were obtained from accounting practitioners who were invited to participate through snowball sampling. Participants were informed of the study's purpose and objectives, and their consent was obtained before they completed the questionnaire. They were also given the option to withdraw at any time during the data collection process, ensuring that the study adhered to ethical guidelines for participant consent and data confidentiality.

Once the data were collected, they were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM), a statistical technique well-suited to handle complex models with multiple latent variables, especially when sample sizes are relatively small. PLS-SEM was used to test two primary relationships. First, it assessed the direct relationship between environmental accounting practices (EAP) and sustainable value creation (SVC). Second, it examined the mediating role of responsive environmental dynamism (RED) in the relationship between EAP and SVC. This two-stage analysis allowed the study to assess both direct and indirect effects, offering insights into the mechanisms through which environmental accounting practices contribute to sustainable value creation.

The study focuses on various aspects of environmental reporting practices, including environmental management accounting, cost accounting, external reporting practices, auditing practices, accounting information systems, and reporting responsibility (Brundtland, 1987; IFAC, 2005; Soonawalla, 2006). It also considers sustainable value through the lenses of economic, environmental, and social sustainability. For this purpose, economic sustainability is represented by enabling a green-circular environment, environmental sustainability by empowering the community and raising living standards, and social sustainability by gaining a competitive

economic advantage (Sustainability Development Goals, United Nations). To measure the creation of environmental, economic, and societal value through Red, a self-administered Likert scale questionnaire was employed. The sampling technique used was snowball sampling, targeting managerial-level accounting practitioners in manufacturing organizations listed under the consumer services category on the Colombo Stock Exchange (CSE). A total of 122 responses were collected and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to assess the relationships and effects among the variables.

Table 01: Operationalization

Construct	Dimension	Concept Description	Scale	Source
Environmental Accounting Practices	• Environmental management accounting • Cost accounting • External reporting practices • Auditing practices, • Accounting information systems • Reporting responsibilities	Multifaceted environmental accounting practices refer to a comprehensive approach that integrates various methods—such as environmental management accounting, cost accounting, external reporting, auditing, and accounting information systems—to systematically assess, manage, and report an organization's environmental and economic impacts.	5 point Lickert Scale	Brundtland, 1987; International Federation of Accountants (IFAC), 2005; Soonawalla, 2006
	Environmental Value	Enabling a green-circular	5 point	(Laurell et al., 2018; Harbi et al.,

		environment through environmental accounting practices (GHG emissions, resources conservation, climate change adaption, product-process eco-efficiency)	Lickert Scale	2015; Afonso & Jalles, 2011; Ranganathan,1998; Vinnari & Vinnari, 2014)
	Social Value	Empowering the community through environmental accounting practices (standards of living, health and safety, community network, longevity and consistent)	5 point Lickert Scale	
	Economic Value	Economic competitive advantage through environmental accounting (Cost Savings, Economic functionality, competitive advantage, brand value)	5 point Lickert Scale	
Environmental Dynamism	Adaptability	Environmental dynamism exhibits the	5 point Lickert	(Schilke, 2014)

		ability to cope with new environmental conditions	Scale	

Source: Literature survey

Data Analysis and Results

This exploratory study aims to investigate accountants' perceptions regarding the adoption of environmental practices through a conceptual model. Data analysis was conducted using Smart PLS 3 software, employing the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM is increasingly favored in social science research for its robustness and flexibility (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014).

Initially, the study assessed the measurement model by examining several key criteria: indicator loadings, internal consistency reliability, convergent validity, and discriminant validity. These assessments ensure that the indicators accurately reflect the latent constructs and that the model meets the required standards of validity and reliability. Subsequently, the structural model was evaluated using standard metrics, including the Variance Inflation Factor (VIF) to check for multicollinearity, the coefficient of determination (R^2) to assess explanatory power, and the effect size (f^2) to gauge the impact of predictor variables (Hair, Ringle, & Sarstedt, 2011).

Hypothesized relationships between managerial-level accounting practitioners' perceptions of environmental practice adoption and the mediating role of environmental dynamism were tested using path coefficients, T-statistics, and p-values.

Table 2 presents the descriptive statistics for each indicator along with their outer loadings. The mean values for items related to the latent construct "Environmental Budgeting and Forecasting (EBF)" are relatively low, suggesting that environmental accounting (EA) practices place limited emphasis on forward-looking approaches. Conversely, the mean values for other constructs indicate a significant focus on EA practices. Additionally, the kurtosis and skewness statistics confirm that the data are normally distributed.

Indicator outer loadings were consistent with measurement theory, with the majority of indicators (35 out of 44) exceeding the recommended threshold of 0.708 (Hair, Risher, Sarstedt, & Ringle, 2019). The remaining indicators, with loadings ranging from 0.465 to 0.708, were deemed acceptable and did not adversely affect the constructs' Composite Reliability (CR) when considered for potential removal (Joseph, Hair, Hult, & Ringle, 2017).

Table 2: The Outer Loadings of Indicators and Descriptive Statistics

Concept		Indicator	Outer Loading	Mean	SD	Skewness	Kurtosis
Environmental Accounting Practices (EAP)	Environmental Cost Management (ECM)	ECM 1	0.806 ***	3.514	0.472	-0.336	0.497
		ECM 2	0.660 ***	3.702	1.389	-0.154	0.365
		ECM 3	0.736 ***	4.490	1.471	-0.364	0.329
		ECM 4	0.715 ***	4.135	1.807	-0.953	0.111
	Environmental	EPM 1	0.845 ***	3.604	1.83	-1.008	0.074

	Performance Management (EPM)	EPM 2	0.719 ***	4.065	1.273	-0.901	0.425
		EPM 3	0.662 ***	4.184	1.39	-0.048	0.138
		EPM 4	0.804 ***	4.237	1.422	-0.549	0.206
	Environmental-Accounting Strategic Analysis (ESA)	ESA 1	0.704 ***	4.106	1.398	-0.206	0.232
		ESA 2	0.774 ***	4.290	1.474	-0.525	0.030
		ESA 3	0.869 ***	4.045	1.354	-0.162	0.277
		ESA 4	0.678 ***	3.216	1.534	-0.179	0.011
	Environmental Budgeting and forecasting (EBF)	EBF 1	0.914 ***	3.661	1.402	-0.391	0.431
		EBF 2	0.766 ***	2.665	1.378	-0.381	0.167
		EBF 3	0.716 ***	3.018	1.485	-0.626	0.393
		EBF 4	0.690 ***	3.135	1.426	-0.327	0.182
	Environmental Capital Budgeting (ECB)	ECB 1	0.821 ***	4.167	0.414	-0.549	0.565
		ECB 2	0.710 ***	4.114	0.602	-0.206	0.246
		ECB 3	0.465 ***	4.363	1.39	-0.525	0.485
		ECB 4	0.705 ***	4.237	1.035	-0.152	0.102
	Environmental External Reporting (EER)	EER 1	0.783 ***	4.367	0.504	-0.176	0.299
		EER 2	0.796 ***	4.261	0.965	-0.491	0.213
		EER 3	0.662 ***	4.298	1.084	-0.526	0.589
		EER 4	0.776 ***	4.273	1.137	-0.286	0.589
	Environmental Auditing (EA)	EA 1	0.813 ***	4.318	1.006	-0.541	0.828
		EA 2	0.750 ***	4.084	1.19	-0.216	0.316
		EA 3	0.638 ***	4.49	0.945	-0.411	0.422
		EA 4	0.720 ***	4.322	0.116	-0.304	0.329
Responsive Environmental Dynamism (RED)		RED 1	0.853 ***	4.235	1.807	-0.853	0.154
		RED 2	0.882 ***	3.502	1.83	-0.008	0.274
		RED 3	0.887 ***	4.312	1.273	-0.921	0.325
		RED 4	0.801 ***	4.154	1.39	0.148	0.218
Sustainable Value Creation (SVC)	Economic Value Creation (EVC)	EVC 1	0.768 ***	4.216	1.288	-0.426	0.422
		EVC 2	0.778 ***	4.029	1.454	-0.535	0.103
		EVC 3	0.831 ***	4.325	1.324	0.142	0.077
		EVC 4	0.882 ***	3.156	0.654	-0.341	0.154
	Environmental Value Creation (EnVC)	EnVC1	0.768 ***	3.321	1.312	-0.391	0.432
		EnVC2	0.772 ***	4.265	1.478	0.371	0.267
		EnVC3	0.878 ***	4.028	1.435	-0.524	0.143
		EnVC4	0.774 ***	4.335	1.226	-0.377	0.382
	Societal Value Creation (SoVC)	SoVC 1	0.754 ***	4.627	0.711	-0.445	0.425
		SoVC 2	0.804 ***	4.514	0.602	-0.206	0.336
		SoVC 3	0.884 ***	4.633	1.439	-0.525	0.425
		SoVC 4	0.802 ***	4.357	1.412	-0.519	0.216

Source: Author's computation

Tables 3a and 3b present the Cronbach's Alpha and Composite Reliability (CR) results for each construct and its respective attributes. Both Cronbach's Alpha and CR values fall within the recommended thresholds: Cronbach's Alpha exceeds 0.7 (CA > 0.7), and Composite Reliability ranges between 0.7 and 0.9 (0.7 < CR < 0.9). These values confirm satisfactory internal consistency reliability for the constructs (Joseph, Hair, Hult, & Ringle, 2017; Richter, Cepeda, Roldán, & Ringle, 2016).

Convergent validity for each construct was assessed using the Average Variance Extracted (AVE). As shown in Table 3, all AVE values exceed the minimum acceptable threshold of 0.5, indicating an adequate level of convergent validity for the constructs (Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). This demonstrates that the constructs effectively capture the intended measurement of their respective attributes.

Table 3(a): Concepts' Internal Consistency and Convergent Validity

Latent Constructs	Cronbach's alpha	Composite reliability	AVE

Environmental Accounting Practices (EAP)	0.941	0.752	0.591
Responsive Environmental Dynamism (RED)	0.884	0.804	0.612
Sustainable Value Creation (SVC)	0.854	0.832	0.542

Source: Author's estimation

Table 3(b): Attributes' Internal Consistency and Convergent Validity

Variables		Items	Cronbach's alpha	Composite reliability	AVE
Environmental Accounting Practices (EAP)	Environmental Cost Management (ECM)	ECM 1	0.902	0.894	0.583
		ECM 2			
		ECM 3			
		ECM 4			
	Environmental Performance Management (EPM)	EPM 1	0.892	0.831	0.601
		EPM 2			
		EPM 3			
		EPM 4			
	Environmental- Accounting Strategic Analysis (ESA)	ESA 1	0.919	0.872	0.521
		ESA 2			
		ESA 3			
		ESA 4			
	Environmental Budgeting and forecasting (EBF)	EBF 1	0.841	0.885	0.582
		EBF 2			
		EBF 3			
		EBF 4			
	Environmental Capital Budgeting (ECB)	ECB 1	0.894	0.835	0.594
		ECB 2			
		ECB 3			
		ECB 4			
	Environmental External Reporting (EER)	EER 1	0.811	0.845	0.593
		EER 2			
		EER 3			
		EER 4			
	Environmental Auditing (EA)	EA 1	0.921	0.856	0.608
		EA 2			
		EA 3			
		EA 4			
Responsive Environmental Dynamism (RED)		RED 1	0.884	0.804	0.612
		RED 2			
		RED 3			
		RED 4			
Sustainable Value Creation (SVC)	Economic Value Creation (EVC)	EVC 1	0.821	0.835	0.563
		EVC 2			
		EVC 3			
		EVC 4			
	Environmental Value Creation (EnVC)	EnVC1	0.941	0.826	0.508
		EnVC2			
		EnVC3			
		EnVC4			
	Societal Value Creation (SoVC)	SoVC 1	0.984	0.814	0.522
		SoVC 2			
		SoVC 3			
		SoVC 4			

Source: Author's estimation

To evaluate the discriminant validity of the constructs (Table 4a and 4b), assessed whether each construct measures distinct dimensions. Discriminant validity is confirmed when the square root of the Average Variance Extracted (AVE) for each construct is greater than its correlations with other constructs (Hair, Risher, Sarstedt, & Ringle, 2019; Hair, Sarstedt, Hopkins, & Kuppelwieser, 2014). Tables 4a and 4b display the square roots of the AVE values on the diagonals, with off-diagonal values representing the correlations between constructs.

The results demonstrate that the loadings of the indicators within their respective constructs are higher than their loadings with other constructs, which confirms discriminant validity. Specifically, each construct's square root of the AVE is greater than the correlations with other constructs, as shown in the tables. This indicates that the constructs are distinct and appropriately measured within the model.

Table 4(a): Concepts' Discriminant Validity

	EAP	**RED**	**SVC**
EAP	**0.769**		
RED	0.532	**0.782**	
SVC	0.542	0.512	**0.736**

Source: Author's estimation

Table 4(b): Attributes' Discriminant Validity

	ECM	EPM	ESA	EBF	ECB	EER	EA	RED	EVC	EnVC	SoVC
ECM	**0.764**										
EPM	0.645	**0.775**									
ESA	0.666	0.697	**0.722**								
EBF	0.671	0.633	0.708	**0.763**							
ECB	0.633	0.612	0.642	0.673	**0.771**						
EER	0.431	0.444	0.457	0.466	0.497	**0.770**					
EA	0.504	0.424	0.457	0.446	0.497	0.508	**0.780**				
RED	0.592	0.661	0.666	0.731	0.666	0.531	0.751	**0.782**			
EVC	0.452	0.541	0.487	0.421	0.531	0.721	0.761	0.597	**0.750**		
EnVC	0.431	0.566	0.468	0.425	0.535	0.742	0.674	0.578	0.624	**0.713**	
S0VC	0.456	0.552	0.461	0.431	0.541	0.731	0.635	0.571	0.687	0.634	**0.722**

Source: Author's estimation

Table 5 summarizes the structural model evaluation results, which are depicted in Figure 1. Path coefficients are used to determine the direction and extent of the relationship between latent constructs (Joseph, Hair, Hult, & Ringle, 2017). To estimate the statistical significance of the path coefficients, the study used a 5000 bootstrapping procedure. The hypothesized relationships between each variable were either accepted or rejected.

Table 5: Results of Hypothesis Testing

Hypothesis	Path	Path Coefficient	S.E.	C.R	T-Statistics	p-Value	f^2	Decision
H1	EAP -> RED	0.395	0.081	3.994	5.936	0.000	0.152	Accepted
H2	RED -> SVC	0.302	0.052	4.204	6.121	0.000	0.167	Accepted
H3	EAP -> SVC	0.332	0.063	4.009	5.121	0.000	0.142	Accepted

Source: Author's estimation

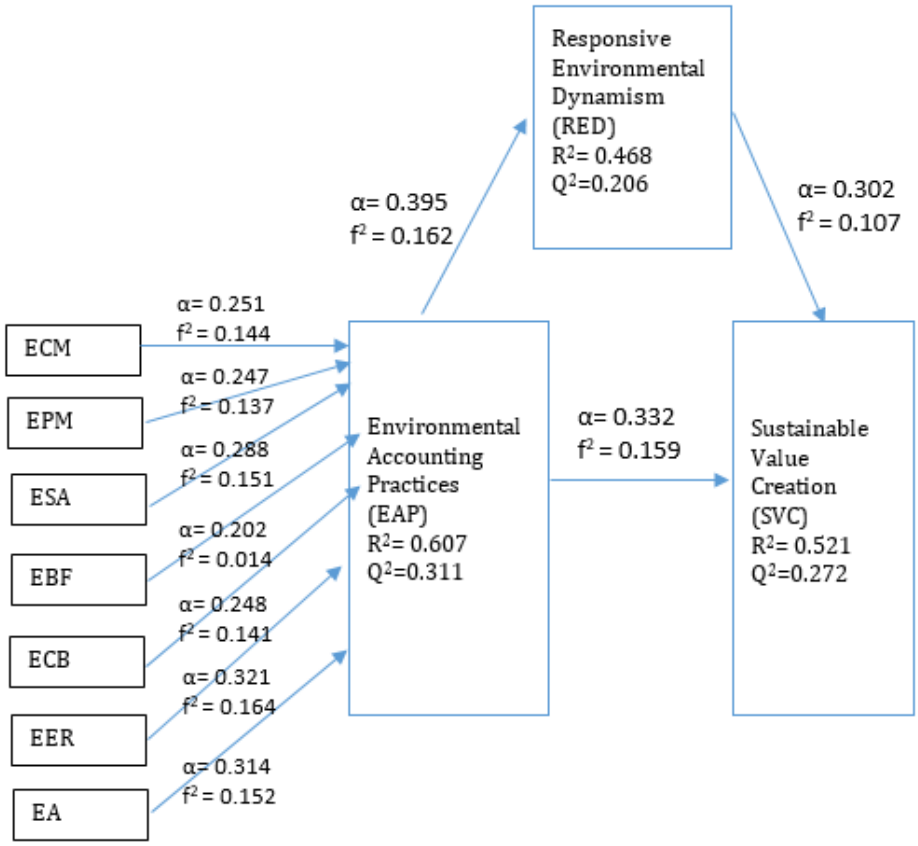

Figure 1: SEM Model

The effect size (F2) of Environmental External Reporting (EER) and Environmental Auditing (EA) shows that they are the best predictors of Environmental Accounting Practices respectively 0.164 and 0.152. Meanwhile, Environmental Budgeting and Forecasting (EBF) effect size stands at the lowest range (F2 = 0.014)

Hypothesis three (H3) evaluates the direct impact of Environmental Accounting Practices (EAP) on Sustainable Value Creation (SVC). This hypothesis examines the extent to which EAP enhances economic, social, and environmental performance dimensions, collectively contributing to the realization of sustainable value. The path coefficient for the direct relationship between EAP and SVC yielded a significant positive value ($\beta = 0.332$, $f^2 = 0.142$, $p = 0.000$). These results indicate that EAP directly contributes to SVC by enabling organizations to implement practices that align with economic, environmental, and social sustainability goals. This direct relationship

between EAP and SVC underscores that organizations engaging in robust environmental accounting practices are better equipped to achieve sustainable value creation. This is achieved by improving operational efficiency, fostering community empowerment, and gaining competitive economic advantages.

Hypothesis one posits that environmental dynamism mediates the relationship between EAP and SVC. This hypothesis examines an indirect relationship, dividing it into two interconnected parts to facilitate a detailed analysis: H1 investigates the direct relationship between Environmental Accounting Practices (EAP) and Responsive Environmental Dynamism (RED) and H2 explores the relationship between Responsive Environmental Dynamism (RED) and Sustainable Value Creation (SVC). The mediated analysis confirmed the importance of RED as a dynamic enabler. The path coefficients ($\beta = 0.395$, $f^2 = 0.152$, $p = 0.000$ from EAP to RED; $\beta = 0.302$, $f^2 = 0.167$, $p = 0.000$ from RED to SVC) highlight RED's role in amplifying the impact of EAP on SVC. Accordingly, the mediating role of RED illustrates that environmental dynamism acts as a conduit through which EAP can more effectively influence sustainable value creation. Organizations that adapt dynamically to environmental changes are better positioned to leverage accounting practices into actionable strategies that drive sustainable outcomes.

Discussion of the Findings

The study aimed to capture accounting practitioners' perceptions of the impact of environmental accounting practices on long-term value creation. The findings reveal that environmental accounting practices significantly influence achieving long-term performance. Specifically, practices such as Environmental Cost Management (ECM), Environmental Performance Management (EPM), Environmental Accounting Strategic Analysis (ESA), Environmental Budgeting and Forecasting (EBF), Environmental Capital Budgeting (ECB), Environmental External Reporting (EER), and Environmental Auditing (EA) are widely implemented by accountants (CIMA, 2014; Deegan, 2013; Soonawalla, 2006; IFAC, 2005).

Analysis of the effect sizes (f^2) indicates that Environmental External Reporting (EER) and Environmental Auditing (EA) are the most influential predictors of Environmental Accounting Practices, with effect sizes of 0.164 and 0.152, respectively. In contrast, Environmental Budgeting and Forecasting (EBF) shows a lower effect size ($f^2 = 0.014$), suggesting that it is less impactful in predicting the adoption of environmental accounting practices. These findings align with theoretical perspectives from legitimacy theory and the Theory of Planned Behavior (TPB), which emphasize that practitioners focus on activities that generate tangible economic value. Environmental External Reporting (EER) and Environmental Auditing (EA), being more visible to external stakeholders, generate greater perceived value compared to other practices (Chuanmin et al., 2018; Thoradeniya et al., 2015; Gray, 2001).

The findings of this study provide a significant contribution to the understanding of how Environmental Accounting Practices (EAP) influence Sustainable Value Creation (SVC), both directly and through the mediating role of Responsive Environmental Dynamism (RED). The results affirm the theoretical underpinnings of environmental accounting as a driver of sustainability while shedding light on the critical importance of adaptability in dynamic environments. The direct relationship between EAP and SVC, with a positive path coefficient (β

= 0.332, f^2 = 0.142, p = 0.000), highlights that robust environmental accounting enables organizations to embed sustainability into their operations effectively. By incorporating environmental costs, resource utilization metrics, and performance indicators into strategic decisions, businesses can enhance economic efficiency, reduce waste, and align with broader environmental goals. These findings align with previous literature, such as Deegan (2013) and Adams and Simnett (2011), which emphasizes the role of environmental accounting in integrating sustainability into business practices.

The study's mediated analysis further elucidates the role of RED as a dynamic enabler in amplifying the effects of EAP on SVC. The significant path coefficients (β = 0.395, f^2 = 0.152, p = 0.000 from EAP to RED; β = 0.302, f^2 = 0.167, p = 0.000 from RED to SVC) demonstrate that adaptability to environmental changes enhances the effectiveness of environmental accounting. This finding corroborates the arguments of Li and Liu (2014) and Jiao, Alon, and Cui (2011), who stress the importance of aligning organizational strategies with environmental dynamism. Organizations operating in volatile environments benefit from embedding flexibility into their accounting practices, enabling them to anticipate regulatory changes, adapt to market uncertainties, and respond to stakeholder expectations. RED's role as a mediator underscores the need for a dual focus: not only should organizations adopt rigorous environmental accounting practices, but they must also cultivate adaptability to sustain competitive advantage and long-term value creation.

This research bridges critical gaps in the literature by empirically demonstrating the interplay between environmental accounting, environmental dynamism, and sustainable value creation in a context-specific manner. Unlike previous studies that primarily focus on the standalone benefits of EAP, this study delves into how external environmental factors, characterized by dynamism and unpredictability, influence their effectiveness. Additionally, the findings contribute to addressing concerns over "greenwashing" (Burritt & Schaltegger, 2010), as they highlight the importance of substantive environmental accounting and adaptive capabilities in achieving genuine sustainability outcomes. These insights are particularly relevant for organizations in developing economies, such as Sri Lanka, where the manufacturing sector faces increasing pressure to balance growth with environmental stewardship. By providing a comprehensive framework that links EAP, RED, and SVC, this study offers actionable recommendations for policymakers and practitioners aiming to enhance sustainability practices.

Conclusion and Implications of the Study

This study has developed a measurement model for accounting practices aimed at assessing the achievement of sustainable value, utilizing both Legitimacy Theory and the Theory of Planned Behavior (TPB) as theoretical foundations. The quantitative analysis confirms that environmental accounting practices significantly contribute to long-term performance by addressing environmental unpredictability, instability, and volatility, and by meeting the increasing demand for comprehensive environmental information. The findings reveal that practices such as Environmental External Reporting (EER) and Environmental Auditing (EA) are pivotal in enhancing the effectiveness of environmental accounting. These practices not only align closely with external stakeholder expectations but also demonstrate considerable impact in achieving sustainable value. Conversely, practices like Environmental Budgeting and Forecasting (EBF) are

less influential in predicting the adoption of environmental accounting practices, suggesting that their role may be more limited compared to other practices. The study also highlights the crucial role of environmental dynamism as a mediator between environmental accounting practices and sustainable value creation. This underscores the need for organizations to adapt their accounting practices in response to evolving environmental conditions to maximize their value creation potential.

Based on the findings, there is a pressing need for policymakers and regulatory bodies to develop a comprehensive policy outline for environmental accounting practices. Such policies should aim to create sophisticated accounting systems and reporting frameworks that effectively integrate economic, environmental, and societal value dimensions. By doing so, authorities can ensure that organizations are better equipped to handle new environmental challenges and meet stakeholder demands for transparency. Organizations should prioritize the implementation of advanced environmental accounting practices such as EER and EA, which have been identified as significant predictors of sustainable value creation. These practices not only facilitate compliance with external reporting requirements but also enhance organizational legitimacy and stakeholder trust. Conversely, while EBF remains important, its relatively lower impact suggests that organizations may need to focus more on enhancing other practices that drive greater value. The study emphasizes the importance of environmental dynamism in mediating the relationship between accounting practices and sustainable value creation. Organizations should invest in developing flexible and responsive accounting systems that can adapt to changing environmental conditions. This includes integrating real-time data and predictive analytics to better anticipate and respond to environmental fluctuations.

Future research should explore the application of the developed measurement model in various industry contexts to validate its generalizability. Additionally, longitudinal studies could provide insights into the long-term impacts of environmental accounting practices on sustainability performance. Researchers might also investigate the potential barriers to implementing advanced environmental accounting practices and develop strategies to overcome these challenges.

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