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BEYOND FINANCIALS: A SYSTEMATIC LITERATURE REVIEW ON THE ROLE OF GREEN ACCOUNTING IN ENVIRONMENTAL SUSTAINABILITY

Mr. Kuldip Maheshkumar Parikh, Dr. S.S. Sodha

Senior Research Fellow, School of Commerce
Gujarat University

Professor, School of Commerce
Gujarat University

Abstract

Green accounting has emerged as a crucial mechanism for integrating environmental considerations into corporate financial reporting. This study systematically reviews the literature on green accounting, highlighting its evolution, significance, and challenges in corporate sustainability practices. The analysis explores key themes, including accounting and reporting practices, economic and environmental measures, human resource management, and regulatory influences. Despite the growing adoption of green accounting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB), inconsistencies in reporting, regulatory gaps, and a lack of organizational learning persist as critical barriers. The study identifies technological advancements, such as artificial intelligence and blockchain, as potential solutions to enhance transparency and efficiency in environmental accounting. Furthermore, the paper outlines key research gaps and suggests future research directions, including the financial implications of green accounting and the role of policy interventions in standardizing sustainability reporting. This review contributes to a deeper understanding of green accounting's role in corporate sustainability and provides valuable insights for policymakers, researchers, and practitioners seeking to enhance environmental accountability in business operations.

Keywords: *Green Accounting, Environmental Reporting, Sustainability Accounting, Systematic Literature Review (SLR), Environmental Management Accounting (EMA), Regulatory Frameworks in Sustainability*

1. INTRODUCTION:

In the dynamic realm of corporate reporting, an ever-evolving landscape is taking shape, driven by the fundamental principle of measuring transactions in monetary terms. This traditional approach has long anchored financial reporting to transactions with tangible economic value, primarily serving the interests of shareholders, investors, and immediate stakeholders. However, this traditional view often left out the broader concerns of the public and civil societies. As we fast forward to the present day, we bear witness to a remarkable transformation in the world of annual reporting. It extends beyond the confines of numbers on a balance sheet, now encompassing both financial and non-financial data. This evolution has given birth to a global reporting standard known as "green" or "environmental" accounting and reporting. This paradigm shift is propelled by the growing recognition that a corporation's environmental and social performance is intimately intertwined with its financial stability, impacting not only investors but also governments, creditors, and the general public. Green accounting emerges as an indispensable tool, illuminating the pivotal roles businesses play in safeguarding the environment and enhancing societal well-being. It not only quantifies a company's contributions to economic prosperity but also takes into account the costs associated with pollution or resource depletion and their broader societal impact.In the wake of these transformative changes, companies find themselves navigating a landscape marked by heightened stakeholder scrutiny. Stakeholders are increasingly concerned about the environmental and societal impacts of corporate operations, recognizing that every operational process can have profound effects on our environment and society. Governments, consumers, local communities, and international organizations champion the cause of sustainable development, emphasizing the possibility of achieving economic growth while safeguarding our environment. Under the influence of this sustainability imperative, innovative environmental technologies and management

practices have emerged as effective strategies to enhance corporate environmental performance. Companies now find themselves disclosing environmental policies, programs, and performance in their annual and standalone environmental reports. Yet, to effectively manage sustainability, comprehensive information is essential. Such information must encompass both monetary and non-monetary aspects of environmental performance, providing a holistic view of a company's impact.

While traditional accounting systems often obscure environmental costs within administrative and overhead accounts, the broader trend emphasizes transparency. Companies tend to quantify the monetary value of environmental activities primarily for significant issues, potentially underestimating environmental costs. This approach can hinder efforts to mitigate emissions and waste at their source. Consequently, understanding the barriers to developing environmental management accounting is crucial in this evolving landscape. While extensive research has explored the driving forces behind corporate social responsibility and reporting, the underlying causes of obstacles to environmental management accounting remain a less explored territory. In the 21st century, concerns about our planet's state have intensified due to rising global temperatures and climate change, prompting international action through treaties like COP 21, the Kyoto Protocol, and the Brundtland Commission. This heightened environmental awareness extends to businesses as the adverse environmental impacts of corporate activities become increasingly evident. Accounting, once confined to financial reporting, has now evolved into a broader role, encompassing the measurement and analysis of a firm's environmental impacts through environmental management accounting (EMA). EMA involves disseminating environmental information, such as waste quantities, radiation levels, and carbon emissions, to inform internal decision-making processes. Diverse managerial accounting methods are employed to track these costs.

The United Nations Division on Sustainable Development (UNDSD) emphasizes the importance of adopting EMA for corporations. EMA enables the implementation of cleaner and more efficient procedures, such as reducing carbon emissions and optimizing resource usage. While EMA is globally recognized as an effective accounting practice, its application and development in several developing economies remain limited. In essence, this ongoing transformation in accounting is steering businesses toward a more sustainable future, with green accounting as a guiding beacon. The threads of change connect each paragraph, forming a continuous narrative of evolution and adaptation in corporate reporting. In this dynamic landscape of corporate reporting, numerous studies have explored various aspects of green accounting. However, despite the growing importance of this field, there has been a glaring gap - a lack of a comprehensive systematic literature review in the context of green accounting. While individual studies have delved into specific facets of green accounting, no one has undertaken the ambitious task of systematically reviewing the entire body of literature in this domain. Our research objective is to fill this critical gap. We aim to systematically review the existing literature on green accounting, spanning a wide range of topics and perspectives. By doing so, we seek to provide a comprehensive and up-to-date context that aligns with the evolving themes in green accounting literature. Our objective is to contribute to a more robust understanding of this vital field, shedding light on its various dimensions and implications within the broader landscape of corporate reporting

2. METHOD:

The practice of systematic reviews has gained widespread acceptance across various academic disciplines, particularly in the field of management. These reviews are highly regarded for their ability to enhance research rigor (Dorn et al., 2016) and promote evidence-based research (Tranfield et al., 2003). They serve as invaluable tools for gaining a comprehensive understanding of the current state of research within a specific field. What sets systematic literature reviews (SLRs) apart from traditional reviews is their commitment to a predefined protocol for systematically searching and analyzing existing literature. This rigorous approach ensures transparency and replicability throughout the review process (Battisti et al., 2021; Crous et al., 2022; Siddaway et al., 2019). SLRs also provide a robust methodology for identifying and analyzing prior research within a specific domain, making them a valuable resource for conducting transparent and replicable reviews in various fields (Behera et al., 2019). Specifically, SLRs serve the purpose of summarizing the current body of evidence on a particular topic, delineating research gaps, and proposing a conceptual framework for further exploration (Khan et al., 2021). In our preliminary literature review, we identified a notable absence: there is no existing review of the literature on crowdfunding in the context of new ventures. Therefore, our study is designed to perform a descriptive analysis of the existing research on crowdfunding and new ventures, identify and categorize key themes within this body of research, and outline a future research agenda based on the identified research gaps.

A thorough and systematic examination of the available literature was conducted using the Search, Appraisal, Synthesis, and Analysis (SALSA) framework. Grant et al. define a systematic search and review as a two-fold process, involving an extensive search and a critical evaluation, ultimately leading to a 'best evidence synthesis'. The SALSA framework's steps were employed to facilitate a robust analysis of the existing literature while minimizing the potential for bias. To ensure a comprehensive search, a 'snowballing' method was employed between the Appraisal and Synthesis stages.

2.1 Search

The first step of the SALSA framework is a search for the relevant literature. Two academic databases were searched: Scopus and Google Scholar. Three search keywords were defined: “Green Accounting,” “Environmental accounting,” and “Disclosure Practices.” which resulted in the search string (("Green accounting" OR "Environmental accounting") AND ("Disclosure practice")). Initially, a large amount of results was found: Scopus (n = 71) and Google Scholar (n = 54). Results were presented in order of relevance. The number of search results scoped was determined by whether search results were still found relevant past a certain number.

2.2 Appraisal

The second step of the SALSA framework, appraisal, involved further assessing whether search results fulfilled the above inclusion and exclusion criteria. For this purpose, the abstracts of identified papers and reports were read and, subsequently, the entire publication browsed. A total of 125 publications were scoped from the databases. Many results appeared in more than one search engine but were only counted where they first appeared. The resulting publications found appropriate for further analysis were 58 from Scopus , 39 from Google Scholar.

2.3 Synthesis

As mentioned above, to identify more relevant indicator sets, a step of ‘snowballing’ was added to the SALSA framework [36]. The ‘snowballing’ approach involves using the references and citations of papers to identify more relevant literature. Review papers and background sections of publications found through the initial search served as a basis for snowballing to find more indicator sets. Through this method, 24 additional papers or reports were identified that were snowballed from eight different publications.

2.4 Analysis

After completing the initial three steps of the modified SALSA framework, which involved an extensive search in both national and international journals, we successfully identified a total of 82 relevant publications for our study. These carefully selected publications formed the foundation of our research. In the subsequent Analysis phase of the SALSA framework, we adopted a meticulous and systematic approach to extract meaningful insights from this extensive literature pool. To streamline this process, we harnessed the power of NVivo, a robust qualitative data analysis tool. NVivo played a pivotal role in our methodology by providing us with the means to systematically code the information contained within these publications. This methodical coding process was instrumental in our quest to uncover and categorize emerging themes and patterns within the literature. It not only allowed us to sift through the wealth of information but also helped us structure and organize it effectively. By discerning recurring themes and identifying evolving trends, we gained a profound understanding of the subject matter at hand. This comprehensive understanding was pivotal in shaping the foundation of our review. In essence, our meticulous approach, coupled with the utilization of NVivo, empowered us to navigate the vast sea of literature, extract valuable insights, and lay the groundwork for a comprehensive and insightful review of the chosen topic.

3. THEMATIC ANALYSIS

In our comprehensive analysis of various literature sources, we embarked on a coding procedure to extract pertinent information and insights. As we meticulously reviewed the collected data, a structured pattern emerged. This pattern revealed distinct sub-themes that encapsulated the core concepts discussed in the papers.

Upon a closer examination of these sub-themes from a bird's-eye perspective, we discerned the emergence of specific overarching major themes that resonate throughout the corpus of literature. These significant themes serve as fundamental pillars, underpinning the discourse on various aspects of accounting, sustainability, and environmental considerations.

The identified major themes are as follows:

1. Green Accounting and Environmental Sustainability
2. Economic and Environmental Measures
3. Human Resource Management and Green Accounting

4. Accounting and Reporting Practices
5. Critiques and Limitations

In-depth details of the codes and sub-themes are thoughtfully presented in the Figure 1 provided below. This figure offers a granular breakdown of the specific topics and issues addressed within each theme, allowing for a comprehensive exploration of the nuanced aspects of environmental accounting, sustainability, and related fields as discussed in the literature.

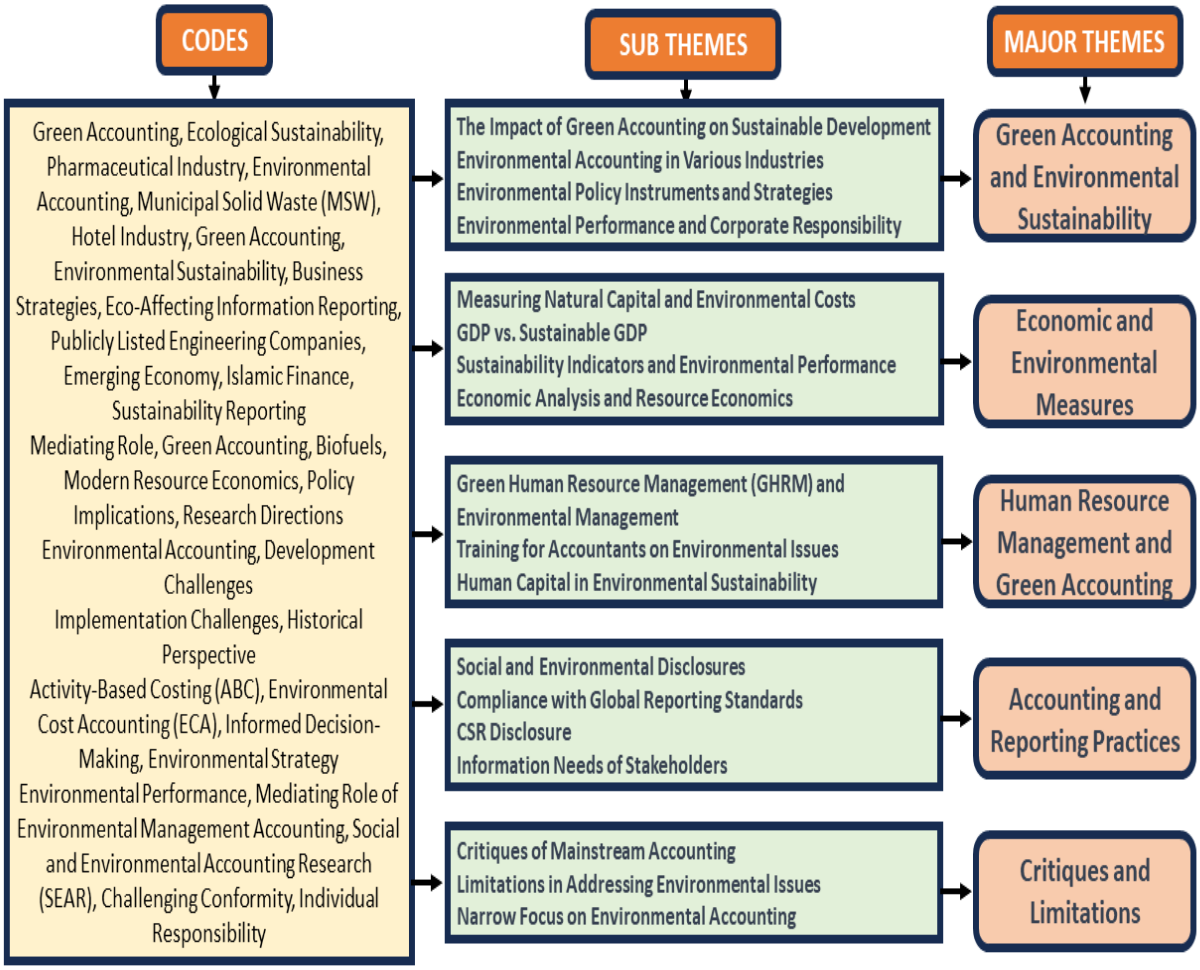

Figure: 1 Theme identification Process

3.1 Green Accounting and Environmental Sustainability

The literature on green accounting and financial sustainability paints a comprehensive picture of its evolving role and significance in various contexts. Beginning with the infancy of green accounting in developing nations like India, the research highlights its potential for standardized development and its role in evaluating the influence of Sustainable Development Goals on carbon emissions and forest carbon stock accounting. This infancy underscores a global need for standardized approaches to green accounting and sustainability measurement.

Delving deeper into sector-specific investigations, the pharmaceutical industry emerges as a focal point for understanding the interplay between green accounting and environmental sustainability. (Wiredu et al., 2023) revealed that environmental compliance and business efficiency significantly contribute to sustainability, with ecological costs acting as crucial mediators. These insights underline the importance of holistic approaches by policymakers and corporations to effectively address societal and environmental impacts.

Further enriching the discourse, (Sarea, 2021) explored the relationship between Islamic Finance and Sustainability Reporting, with Green Accounting as a mediator. The research indicates a positive association between specific

Islamic financing practices and the inclination toward Sustainability Reporting. Moreover, it highlights how Green Accounting strengthens this relationship, promoting eco-friendly practices within Islamic Finance and sustainability reporting.

Shifting the focus to the palm oil industry, two separate studies converge on a significant point: green accounting and environmental performance positively influence the sustainable development of palm oil companies. Additionally, corporate social responsibility (CSR) disclosure amplifies these positive impacts. These findings offer valuable guidance for investors and stakeholders interested in fostering environmentally responsible and socially accountable practices within the palm oil industry.

Expanding the scope to encompass Bangladeshi companies, research demonstrates that implementing green accounting enhances sustainability. A noteworthy finding underscores the positive link between social responsibility reporting quality and sustainability. This highlights the pivotal role of transparent environmental reporting practices in driving sustainability efforts.

The environmental accounting of municipal solid waste in the Hong Kong hotel industry reveals critical insights, showcasing major contributors such as plastic toiletries and projecting future waste growth. This study provides actionable recommendations for green accounting strategies based on these findings.

Shifting to an examination of eco-affecting information reporting practices in an emerging economy, findings expose a stark reality: engineering companies report only a fraction of eco-affecting information. While firm visibility, represented by total assets, positively influences reporting, business experience, linked to firm age, has a negative impact. Policymakers are urged to consider these corporate characteristics when shaping environmental reporting policies.

A comparative analysis of environmental information disclosure in annual reports of listed companies in Singapore and Malaysia underscores disparities. Singaporean organizations tend to disclose less environmental information compared to their counterparts in Malaysia. This discrepancy highlights the need for greater transparency and harmonization in environmental reporting practices within these nations.

In a separate exploration of the hotel industry, two studies unveil the key drivers behind the development of green reputations. They reveal that environmental awareness, involvement, and reporting collectively contribute to a hotel's green reputation. Moreover, green culture emerges as a legitimizing factor in the eyes of consumers, fostering trust and recognition. These studies introduce innovative models that combine green culture and green accounting as strategies for enhancing sustainability and competitiveness in the global market.

Amidst the COVID-19 crisis, the importance of the Beyond GDP agenda gains prominence. The framework introduced distinguishes between production, well-being, and assets, recognizing the limitations of GDP in measuring well-being and sustainability. It underscores the need for practical indicators to measure progress beyond GDP in the post-COVID-19 era.

The resurgence of environmental accounting within the accounting profession is not without challenges. Critics argue that it may be reduced to fit existing financial and management accounting principles. However, proponents contend that it has a broader scope and significance, extending beyond simple adjustments to costs or risk profiles.

Lastly, the Dutch experience with Company-Wide Environmental Control (CWEC) provides insights into components such as environmental reporting, materials registration, green accounting, and environmental auditing. It explores ongoing debates and potential legislative anchoring of these concepts in the Dutch political landscape. Additionally, it considers the role of chartered accountants in CWEC and the likelihood of corporate green reporting becoming a standard practice.

Certainly, after reviewing the existing literature on green accounting and financial sustainability, several potential research questions and research gaps emerge. These questions can serve as valuable starting points for further studies in this theme:

RQ1: How can adopting green accounting be encouraged and standardized across developing countries, considering their unique contextual factors, and what role can international organizations play in this process?

RQ2: To what extent do investor preferences and behaviors, such as ESG (Environmental, Social, and Governance) investing, influence the adoption of green accounting practices in publicly listed companies, and how can these dynamics be harnessed to accelerate sustainability efforts?

3.2 Economic and Environmental Measures

In the realm of economic and environmental measures, (Allen et al., 2017) underscored the need to monitor sustainability while acknowledging the limitations of traditional economic metrics. The concept of "monitoring

what matters," which challenges the adequacy of conventional indicators like Gross National Product (GNP). (Allen et al., 2017) advocated for alternative metrics such as 'green' GNP, 'genuine savings,' and a range of environmental performance indicators. An exemplary illustration of this holistic approach is the "Pilot Environmental Sustainability Index," integrating 64 variables for a comprehensive assessment of sustainability. His research emphasizes the significance of embracing comprehensive metrics to advance our understanding of and progress toward sustainability.

(Ducoing, 2019; Lee' et al., 2020) studied the valuation of natural capital and the complexities associated with it. These studies delve into the theoretical foundations of natural capital and various measurement methods, all with the aim of enhancing wealth measurement by incorporating natural capital as an essential economic input. This recognition highlights the intricate task of assigning value to nature within economic development models.

China's environmental challenges and economic growth present a real-world scenario. Researchers employ an extensive methodology, integrating the System of Environmental and Economic Accounts with an economic input-output life cycle assessment model. (Thampapillai et al., 2007; Wu & Han, 2020) revealed the delicate balance required to address greenhouse gas (GHG) emissions while sustaining economic growth, particularly in energy-intensive sectors. This case study emphasizes the need for tailored strategies to navigate environmental challenges within the context of economic development.

The evolution of sustainability reporting emerges as another noteworthy aspect. The historical backdrop traces the origins of sustainability reporting back to the 1960s, with milestones like the 'Brundtland report' defining sustainable development. This evolution led to the development of reporting frameworks, including Green Accounting, Social Reporting, Triple Bottom Line Reporting, and the Global Reporting Initiative (GRI). Integrated reporting, with its focus on six capitals, gains prominence as a means to enhance value creation and reporting practices in modern organizations(Gola et al., 2022).

Within the context of oil extraction, traditional accounting models face challenge. An alternative approach grounded in real-world economic conditions and net present value changes is proposed. (Cairns, 2013) suggested that these new accounting measures complement rather than replace traditional metrics and asserts that non-renewable resources like petroleum can generate income, making conventional accounting practices suitable for economic accounting purposes.

Lastly, the literature explores innovative research perspectives at the intersection of environmental and natural resource economics with productivity analysis. (Dhar et al., 2022) emphasizes the importance of considering environmental impacts when evaluating productivity and efficiency. Novel methods are introduced, applicable in various environmental contexts, with the goal of integrating natural resources into standard national accounting practices.

RQ1: How can we develop more comprehensive and integrated metrics that go beyond traditional economic indicators to effectively measure progress towards sustainability at local, national, and global levels?

RQ2: How can emerging technologies, such as blockchain, artificial intelligence, and big data analytics, be leveraged to enhance the accuracy and efficiency of economic and environmental measures?

3.3 Human Resource Management and Green Accounting

Through an in-depth analysis of 21 pertinent articles centered on the theme of Human Resource Management (HRM) and Green Accounting, a compelling tapestry of findings and insights has woven together. These collective studies cast a revealing light on the intricate interplay between HRM practices and environmental considerations, as well as the seamless integration of green accounting within the strategic fabric of organizations.

The reviewed literature consistently underscores the escalating significance of Green Human Resource Management (GHRM) and its transformative role as a process innovation within organizational frameworks, particularly in the context of addressing pressing environmental concerns. (Rajiani et al., 2015) aptly emphasize how GHRM operates as a conduit that seamlessly integrates employees' abilities, motivations, and opportunities, thereby catalyzing environmentally sustainable business practices. Building upon this foundation, (Rajiani et al., 2016)delve deeper into the integration of HRM practices within the broader spectrum of sustainability initiatives, firmly rooted in the 'green' domain.

(Sabuncu, 2022) interjects by underscoring the critical necessity of adequately equipping accounting professionals to effectively navigate and surmount the multifaceted challenges posed by environmental issues. The focus here converges on education, training, and cultivating the requisite competence in environmental accounting and the art of crafting comprehensive sustainability reports.

Turning the focus to tangible financial outcomes, (Mohtar & Rajiani, 2016) furnish empirical evidence demonstrating

the tangible fiscal advantages stemming from the judicious implementation of green accounting principles, particularly when harnessed through the prism of the Corporate Sustainability Management System (CSMS), predominantly in the context of Indonesian manufacturing enterprises.

Moving beyond the financial realm, the literature reverberates with revelations about the positive influence of GHRM practices on employees' pro-environmental behavior. (Ababneh, 2021; Saeed et al., 2019) illuminate the transformative potential of these practices, with (Dumont et al., 2017) emphasizing the pivotal role played by organizational culture in nurturing a pro-environment ethos among employees.

The influence of incentives and rewards in aligning employee performance with the overarching goals of organizations comes to the fore, with Jabbour et al., Ren et al., and Renwick et al. all singing the praises of this strategy. (Haque, 2017) broadens the horizons by exploring the catalytic impact of green tax incentives on employees' willingness to actively partake in eco-friendly practices. Meanwhile, Tseng et al. (2013) cogently underscore the instrumental importance of employee involvement in green initiatives, stressing its irreplaceable role in elevating environmental management systems.

(Vallaster, 2017) imparts invaluable insights into stimulating and sustaining employee engagement in environmentally conscious endeavors, advocating activities such as the formation of green teams and collaborative problem-solving groups as effective mechanisms.

In closing, (Singh et al., 2020) proffer a compendium of practical recommendations tailored for leaders and managers, offering guidance on championing green innovation and harnessing the full potential of GHRM practices to fortify and enhance environmental performance, all while accentuating the strategic imperatives associated with green HRM practices.

Certainly, after reviewing the existing literature on green accounting and human resource management, several potential research questions and research gaps emerge. These questions can serve as valuable starting points for further studies in this theme:

RQ1: What are the strategies and interventions that organizations can employ to cultivate and sustain such cultures? How do these cultures evolve over time, and what impact do they have on long-term sustainability?

RQ:2 What are the key performance indicators and metrics that organizations can use to measure the strategic impact of Green Human Resource Management (GHRM) and how can these practices be leveraged to gain a competitive advantage?

3.4 Accounting and Reporting Practices

The evolution of accounting and reporting practices in green accounting has gained increasing attention as companies recognize the need for greater transparency in their environmental impact disclosures (Gray et al., 1993; Adams, 2002). A key aspect of green accounting is the ability to integrate environmental costs into financial statements, enabling businesses to assess their ecological footprint while maintaining economic viability (Epstein & Young, 1999). Several studies highlight the significant role of corporate social responsibility (CSR) and sustainability reporting in green accounting (Deegan & Gordon, 1996; Gola et al., 2022). The Global Reporting Initiative (GRI) and the Sustainability Accounting Standards Board (SASB) provide guidelines that assist companies in systematically disclosing their environmental performance. However, there is considerable variation in reporting practices across industries and countries, primarily due to the lack of standardized regulatory frameworks (Kuasirikun & Sherer, 2004).

The literature also discusses the impact of mandatory versus voluntary disclosures on corporate reporting behavior (Wilmshurst & Frost, 2000). While some governments have mandated environmental disclosures through regulatory frameworks (such as the EU Non-Financial Reporting Directive), many corporations continue to engage in voluntary disclosures, often influenced by stakeholder pressure rather than legal requirements (Liu & Anbumozhi, 2009). Research indicates that companies with higher stakeholder engagement tend to provide more comprehensive and transparent environmental reports (Perrini, 2006). Moreover, the integration of digital tools such as blockchain technology and artificial intelligence has been proposed to improve the reliability and accuracy of environmental accounting (Sabuncu, 2022). Emerging technologies can facilitate real-time tracking of emissions, waste management, and resource consumption, thereby enhancing the credibility of sustainability reporting.

Nevertheless, challenges remain. Many companies struggle with data collection, lack of expertise, and inconsistent reporting formats (Jasch, 2003). Addressing these barriers will require greater regulatory alignment, capacity building, and investment in advanced data analytics to improve environmental accounting and reporting practices.

Certainly, after reviewing the existing literature on green accounting reporting practices, several potential research questions and research gaps emerge. These questions can serve as valuable starting points for further studies in this

theme:
RQ1: How can regulatory frameworks be harmonized to create standardized environmental reporting practices across different industries and regions?
RQ2: What role do emerging digital technologies play in improving the reliability and efficiency of green accounting practices?

3.5 Critiques and Limitations

Despite the growing adoption of green accounting practices, several limitations hinder its widespread implementation and effectiveness. One of the primary challenges is the **lack of organizational learning and internal capacity-building** (Epstein & Young, 1999). Many firms, especially in developing economies, do not have the necessary expertise to integrate environmental accounting into their financial practices. Training and knowledge dissemination remain significant hurdles (Kuasirikun, 2005). Another critique is the **narrow focus on economic performance** at the expense of comprehensive environmental sustainability (Gray et al., 2001). Many firms view green accounting as a compliance requirement rather than an opportunity to drive long-term sustainability. This often leads to superficial reporting that lacks depth and fails to capture the full environmental impact of business activities (Adams & Frost, 2008).

Additionally, the **absence of standardized guidelines** for environmental management accounting (EMA) creates inconsistencies in data collection and reporting (IFAC, 2005). Unlike financial accounting, which is governed by stringent international standards, green accounting lacks a universally accepted framework. This results in variations in environmental disclosure quality across different industries and regions (United Nations, 2000).Traditional accounting systems also obscure environmental costs by categorizing them within overhead expenses, making it difficult to track and manage these expenditures effectively (Frost & Wilmshurst, 2000). Studies suggest that companies underestimate environmental costs, which limits their ability to implement proactive measures to reduce their ecological footprint (Jaggi & Zhao, 1996).

Regulatory support plays a crucial role in overcoming these challenges. Governments can encourage the adoption of green accounting through mandatory reporting requirements, tax incentives, and subsidies for companies investing in sustainable practices (United Nations, 2001). However, voluntary approaches have been met with mixed results, as some firms only comply at a minimal level to maintain a positive public image (Hine & Precuss, 2009).

After evaluating the literatures on green accounting under theme of critiques and limitations, several potential research questions and research gaps emerge. These questions can serve as valuable starting points for further studies in this theme:
RQ1: What are the primary barriers preventing companies from adopting comprehensive environmental management accounting systems?
RQ2: How can policymakers design effective incentives to encourage companies to go beyond compliance and actively engage in sustainability initiatives?

4. DISCUSSION

The systematic review of green accounting literature highlights several key findings. First, green accounting is increasingly recognized as an essential component of corporate sustainability (Gola et al., 2022). The integration of environmental costs into financial statements provides a more accurate assessment of a company's overall performance, aligning with stakeholder expectations for transparency and accountability (Dhar et al., 2022).

Second, the variation in reporting practices across industries and regions underscores the need for standardized guidelines (Wilmshurst & Frost, 2000). While frameworks such as GRI and SASB provide useful reporting structures, their voluntary nature limits widespread adoption. Policymakers should consider introducing mandatory environmental disclosures to enhance comparability and reliability across firms (Liu & Anbumozhi, 2009).

Third, technological advancements present opportunities for improving green accounting practices (Sabuncu, 2022). The use of AI, blockchain, and big data analytics can enhance the accuracy of sustainability reporting by automating data collection and analysis. However, the adoption of these technologies remains limited due to cost constraints and the lack of technical expertise in many firms (Mohtar & Rajiani, 2016).

Finally, the study identifies a persistent gap in empirical research on the long-term financial benefits of green accounting. While there is growing evidence linking sustainability initiatives to corporate profitability, further research is needed to establish concrete financial metrics that correlate with green accounting practices (Allen et al., 2017).

5. CONCLUSION

This study provides a comprehensive review of green accounting literature, shedding light on its evolution, challenges, and future directions. The findings indicate that green accounting is a crucial tool for promoting environmental sustainability within corporate frameworks (Wiredu et al., 2023). However, widespread adoption is hindered by inconsistent reporting standards, a lack of organizational learning, and the need for regulatory support (Rajiani et al., 2016).Future research should focus on developing standardized global frameworks to ensure consistent and transparent reporting (IFAC, 2005). Additionally, exploring the financial impact of green accounting practices on long-term corporate profitability can provide valuable insights for businesses and policymakers (Cairns, 2013). Technological integration also presents a promising avenue for improving environmental reporting accuracy and efficiency (Singh et al., 2020).In conclusion, while green accounting has made significant strides, its full potential remains untapped. Businesses, regulators, and researchers must collaborate to refine reporting practices, address existing barriers, and foster a culture of sustainability that extends beyond compliance to proactive environmental stewardship (Wu & Han, 2020).

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