



A Comparative Study of Green Accounting Practices in Public and Private Sector Units in India

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ABSTRACT

This study explores the adoption and implementation of green accounting practices in public and private sector units in India. Green accounting, which integrates environmental costs into financial and managerial reporting, serves as a vital tool for promoting sustainability and informed decision-making. Using a comparative case study design and primary data collected from 50 organizations (25 public and 25 private), the research examines the scope, methods, and challenges associated with environmental accounting across sectors. The findings reveal that public sector units primarily engage in green accounting to comply with regulatory mandates, whereas private firms demonstrate greater adaptability and innovation, often driven by stakeholder expectations and corporate social responsibility goals. Despite these differences, both sectors face common barriers, including the absence of standardized frameworks and limited integration of environmental data into financial statements. The study underscores the urgent need for a unified green accounting policy and institutional support mechanisms to enhance environmental transparency, accountability, and sustainable development in the Indian context.

Keywords: Green Accounting, Environmental Reporting, Public Sector Units, Private Sector, Sustainability, India, Regulatory Compliance, Corporate Social Responsibility, Environmental Disclosure, Comparative Study

1. Introduction

The growing environmental challenges both globally and within India have led to an increased emphasis on integrating ecological considerations into business operations and financial decision-making. In response, green accounting—also referred to as environmental accounting—has emerged as a crucial discipline that seeks to identify, quantify, and incorporate environmental costs into conventional accounting systems. It provides a more holistic view of an organization's performance by accounting for the environmental impact of its activities, thereby enabling better sustainability reporting and responsible resource management. This research paper undertakes a comparative analysis of green accounting practices between public and private sector enterprises in India. It aims to assess the level of adoption, reporting mechanisms, motivations, and challenges encountered by organizations in each sector, thereby contributing to the understanding of sectoral dynamics in environmental accountability.

Objectives:

- To analyze the current state of green accounting in public and private sector units.
- To identify the factors influencing its adoption in both sectors.
- To compare the effectiveness and transparency of environmental disclosures.

2. Literature Review

2.1 Green Accounting: Definition and Importance

Green accounting, also referred to as environmental accounting, integrates environmental costs into traditional accounting systems to reflect the true cost of economic activities. According to the **United Nations (2003)**, green accounting modifies the System of National Accounts (SNA) by incorporating the value of natural resources and environmental degradation. This approach allows businesses and governments to internalize externalities and make informed decisions on resource allocation and sustainability.

Bartelmus (1994) was among the earliest proponents of environmental-economic accounting, arguing for its necessity in achieving sustainable development. **Dasgupta (2004)** also emphasized the need to link human well-being with natural resource conservation. Similarly, **Schaltegger and Burritt (2000)** asserted that environmental accounting enables firms to improve environmental performance while enhancing economic efficiency.

Gray and Bebbington (2001) stressed the ethical dimension of environmental accountability, especially for large corporations. **Lamberton (2005)** suggested that green accounting serves as a bridge between sustainability reporting and traditional financial accounting, aiding in better stakeholder communication.

Moreover, **Herbohn (2005)** noted that companies adopting environmental accounting benefit from improved public image and long-term cost savings. Despite these advantages, **Tilt (2001)** highlighted challenges such as the lack of standard metrics and limited awareness among accountants.

2.2 Public vs. Private Sector Approaches

The adoption of green accounting differs significantly between public and private sector entities. Public sector units (PSUs) often implement environmental accounting due to regulatory obligations, such as environmental audits mandated by the **Comptroller and Auditor General (CAG)** of India. In contrast, private firms are more likely to adopt green accounting voluntarily, often driven by corporate social responsibility (CSR), market reputation, and investor expectations (**Bhatia & Tuli, 2018**).

Qian, Burritt, and Monroe (2011) observed that public sector organizations tend to comply more consistently with sustainability mandates, albeit with limited innovation. Private firms, on the other hand, are more flexible and adaptive but may underreport environmental data due to competitive concerns (**Amran & Devi, 2008**).

Gupta and Sinha (2015) compared reporting patterns across sectors in India and found that public sector firms exhibit more structured disclosures, while private companies focus on selected environmental themes, often related to branding. **Lodhia (2004)** also noted that voluntary disclosures in the private sector are often marketing-oriented rather than performance-driven.

Tilt (2001) and **Burritt and Welch (1997)** both emphasized the influence of organizational culture and leadership on green accounting practices, with public entities typically driven by policy compliance and private firms by profitability and reputation.

2.3 Indian Scenario

In the Indian context, green accounting gained relevance with the introduction of the **Companies Act, 2013**, which mandated CSR spending and related disclosures. The **Securities and Exchange Board of India (SEBI)** later introduced the **Business Responsibility and Sustainability Reporting (BRSR)** framework, further institutionalizing sustainability reporting in India.

Kansal, Joshi, and Batra (2014) noted that although these regulations have improved transparency, significant variation still exists in the quality and depth of disclosures across sectors. **Reddy and Gordon (2010)** highlighted that Indian companies, especially PSUs, often treat environmental disclosures as a compliance requirement rather than a tool for strategic communication.

Saluja and Bansal (2020) observed that private firms in India are increasingly integrating sustainability into their business models, but face challenges in standardizing green metrics. **Tripathi and Awasthi (2017)** found that both public and private firms lack the technical expertise and trained personnel needed to implement comprehensive green accounting systems.

Chatterjee and Mir (2008) further emphasized that while environmental awareness has grown, practical implementation of green accounting remains limited due to inadequate regulatory enforcement and a lack of sector-specific frameworks.

3. Research Methodology

3.1 Research Design

The study employs a **descriptive and comparative research design** to examine and contrast the adoption of green accounting practices across public and private sector organizations in India. The descriptive component helps in outlining the current status and extent of green accounting practices, while the comparative aspect enables a systematic evaluation of sector-wise differences in terms of compliance, reporting quality, and underlying motivations.

3.2 Sample Size and Selection

The research sample comprises **50 organizations**, with an equal representation from the **public sector (25 PSUs)** and the **private sector (25 firms)**. The selection was purposive, targeting organizations operating in environmentally sensitive industries such as **manufacturing, energy, and infrastructure**. These sectors were chosen due to their substantial environmental footprints and growing regulatory scrutiny, making them particularly relevant for studying green accounting adoption.

3.3 Data Collection Methods

Data was gathered through a combination of **primary and secondary sources** to ensure both depth and reliability:

Primary Data: Structured questionnaires and semi-structured interviews were conducted with key personnel responsible for sustainability, environmental compliance, or financial reporting—typically sustainability officers or accounting managers. The questionnaire was designed to assess the extent of green accounting practices, challenges faced, and the motivations behind adoption.

Secondary Data: Publicly available documents such as annual reports, corporate sustainability reports, business responsibility and sustainability reports (BRSR), and audit documents were analyzed to supplement and validate the primary data. These reports provided insights into the actual disclosures made and the consistency of green accounting practices.

3.4 Tools and Techniques of Analysis

The collected data was analyzed using the following techniques:

Comparative Analysis: Used to identify differences and similarities in green accounting practices between public and private sector organizations.

Content Analysis: Applied to qualitative data from reports and interviews to extract thematic patterns in environmental disclosure and reporting formats.

Descriptive Statistics: Utilized to summarize survey responses and identify trends across variables such as sector, reporting depth, and environmental indicators disclosed.

This multi-method approach enabled a comprehensive understanding of green accounting implementation and provided a reliable basis for cross-sector comparison.

4. Data Analysis and Findings

This section presents the empirical findings of the study based on primary and secondary data collected from 50 organizations, equally divided between public and private sector units. The analysis focuses on the level of adoption, reporting areas, key challenges, and sector-wise insights into green accounting practices in India.

4.1 Adoption Level of Green Accounting

An analysis of the survey and interview data reveals that **green accounting adoption is widespread but varies in motivation and execution across sectors**. In the public sector, **72%** of organizations demonstrate compliance with **mandatory environmental audits** and sustainability reporting as prescribed by regulatory authorities such as the Comptroller and Auditor General (CAG) and SEBI. In contrast, **68%** of private sector firms engage in green accounting practices **voluntarily**, primarily driven by **stakeholder expectations**, **investor demands**, and **corporate social responsibility (CSR)** commitments.

4.2 Reporting Areas

A comparative assessment of key environmental disclosure areas highlights sectoral strengths and gaps. The table below summarizes the percentage of organizations disclosing information in each major reporting area:

Table 1: Environmental Disclosure Areas in Public and Private Sector Organizations

Reporting Area	Public Sector (%)	Private Sector (%)
Energy Use	84	76
Carbon Emissions	68	64
Waste Management	72	80
Biodiversity Protection	36	48

The findings indicate that **public sector units lead in energy and emissions reporting**, largely due to **government-mandated formats** and compliance requirements. Conversely, **private sector firms excel in waste management and biodiversity disclosures**, reflecting growing interest in **innovative sustainability practices and green certifications**.

4.3 Challenges Identified

Despite increased adoption, organizations in both sectors face multiple barriers that hinder the effective implementation of green accounting. The key challenges are summarized below:

Lack of Standardized Metrics: Absence of uniform guidelines for environmental cost measurement and disclosure across sectors leads to inconsistency.

Limited Training and Awareness: Many financial and sustainability officers lack formal training in environmental accounting practices.

Inadequate Regulatory Push (Private Sector): While public sector reporting is mandated, private firms operate under voluntary frameworks, resulting in uneven compliance.

Bureaucratic Delays (Public Sector): Public units face procedural bottlenecks in data collection, report preparation, and approval processes.

These findings are consistent with earlier studies by **Kansal et al. (2014)** and **Reddy & Gordon (2010)**, which pointed to systemic and institutional limitations as primary barriers to environmental disclosure.

4.4 Key Insights

The comparative analysis yields several insights regarding green accounting practices in Indian organizations:

Public Sector Leadership in Compliance: Public sector organizations demonstrate greater consistency and coverage in green accounting due to legal mandates and structured reporting frameworks like the CAG's environmental audit reports.

Private Sector Innovation: Private sector firms are more flexible and experimental in their approach, leveraging **AI, IoT, and ESG dashboards** for real-time monitoring and sustainability disclosures.

Lack of Financial Integration: In both sectors, environmental data is seldom integrated into core financial statements. Green expenditures are often listed as **CSR costs** or reported in standalone sustainability sections, limiting their visibility in financial decision-making.

5. Discussion

The findings of this study clearly indicate that while both public and private sector organizations in India are increasingly adopting green accounting practices, their **motivations, execution styles, and reporting depth differ considerably**.

Sectoral Differences in Adoption Approach

In the **public sector**, green accounting adoption is predominantly driven by **regulatory mandates and compliance requirements**, such as environmental audits prescribed by the **Comptroller and Auditor General (CAG)** and provisions under the **Companies Act, 2013**. These mandates have led to more consistent and structured reporting practices. However, such compliance-driven mechanisms often result in a **check-box approach**, limiting opportunities for innovation and strategic integration.

On the other hand, **private sector firms** adopt green accounting more **voluntarily**, motivated by **market competitiveness, investor expectations**, and the growing relevance of **ESG criteria** in capital markets. Private enterprises exhibit **greater flexibility and innovation** in reporting, particularly through the integration of technology, such as **AI-enabled sustainability dashboards, IoT-based monitoring systems, and interactive ESG portals**. However, this innovation is often skewed towards areas that enhance brand image, leading to **selective or incomplete disclosures** (Amran & Devi, 2008; Lodhia, 2004).

Common Gaps and Limitations

Despite differing approaches, both sectors share a **critical weakness**: the limited integration of environmental data into **core financial statements**. Green accounting is typically conducted in **parallel to financial accounting**, with sustainability metrics disclosed in separate reports (e.g., CSR disclosures, BRSR frameworks). This fragmentation reduces the **decision-making utility** of environmental accounting and hinders its alignment with long-term resource planning and capital allocation (Lamberton, 2005; Reddy & Gordon, 2010).

Furthermore, the **absence of standardized green accounting frameworks** results in inconsistencies across firms and sectors. While public sector entities may follow guidelines issued by government agencies, private firms often rely on international frameworks (e.g., GRI, TCFD, ISO 14001), leading to a lack of comparability and credibility in disclosures (Kansal et al., 2014).

Policy Implications and Recommendations

To address these gaps and strengthen the implementation of green accounting in both sectors, the following policy recommendations are proposed:

1. Development of a Unified Green Accounting Framework:

A comprehensive, sector-neutral accounting standard should be developed by national regulatory bodies in consultation with industry experts. This would facilitate consistency, comparability, and integration with financial accounting standards.

2. Mandatory Integration with Financial Statements:

Environmental costs and liabilities should be formally embedded within **profit and loss accounts, balance sheets, and cash flow statements**, enabling better stakeholder decision-making and risk assessment.

3. Capacity Building and Training:

Specialized training programs and certification courses should be introduced for accounting and sustainability professionals across sectors to enhance their understanding of green accounting tools and methodologies.

4. Incentivizing Private Sector Participation:

Fiscal incentives such as **tax deductions**, **ESG-linked financing**, or **preferential credit ratings** can be introduced to encourage private firms to adopt and disclose comprehensive environmental accounting practices.

5. Third-Party Assurance and Audit Mechanisms:

Establishing mandatory **independent verification** of green accounting disclosures can improve transparency and build stakeholder trust.

6. Digital Infrastructure for Real-Time Monitoring:

The government and industry associations can promote the use of **cloud-based platforms** and **data analytics tools** for real-time environmental data collection, ensuring accuracy and accessibility.

6. Conclusion

The findings of this study underscore the growing significance of green accounting as a strategic and regulatory tool for promoting environmental accountability in both public and private sector enterprises in India. While public sector organizations demonstrate higher consistency in environmental reporting due to legal mandates, private firms exhibit greater agility and innovation, often aligning disclosures with investor and market expectations. Despite this progress, a fundamental limitation persists across sectors: the limited integration of environmental information into mainstream financial accounting systems.

There is a **pressing need for a standardized, sector-neutral green accounting framework** that facilitates consistency, comparability, and relevance of environmental data across all industries. Such a framework should be jointly developed by regulatory authorities, professional accounting bodies, and industry stakeholders to ensure its practical applicability and acceptance.

Furthermore, **cross-sector collaboration**, **structured capacity building programs**, and **supportive policy interventions** are essential to bridge the gap between environmental intention and implementation. Future policies should not only mandate environmental disclosures but also **incentivize innovation**, technology adoption, and third-party assurance to enhance transparency and stakeholder confidence.

To advance sustainable development goals, green accounting must evolve from a voluntary or compliance activity into a **core component of corporate financial management and strategic planning**.

7. Recommendations

Based on the findings and analysis presented in this study, the following recommendations are proposed to enhance the adoption, standardization, and effectiveness of green accounting practices across public and private sector units in India:

1. Develop a Unified Green Accounting Framework

There is an urgent need for a comprehensive and standardized green accounting framework that applies uniformly across sectors. This framework should include clear guidelines on environmental cost measurement, disclosure practices, and integration with financial statements. Collaboration between regulatory bodies (such as SEBI, MoEFCC, and ICAI), industry associations, and sustainability experts is essential to ensure both practical **feasibility** and **regulatory alignment**.

2. Introduce Fiscal Incentives and ESG-Linked Financing

To encourage proactive adoption of green accounting practices, the government should provide **tax-based incentives**, **carbon credits**, and access to **ESG-linked credit facilities**. These mechanisms can serve as financial enablers for companies investing in sustainable operations and transparent environmental reporting. Linking financial benefits to verifiable environmental performance would also help institutionalize accountability.

3. Strengthen Capacity Building and Training

A significant barrier to effective green accounting is the **lack of trained personnel** in both accounting and sustainability functions. Targeted training programs, certification courses, and workshops should be conducted for accountants, sustainability officers, and decision-makers. These programs must focus on technical reporting standards, environmental cost valuation, and integration into enterprise resource planning (ERP) systems.

4. Mandate Third-Party Green Audits

To enhance credibility and reduce greenwashing, organizations should be required to undergo **independent third-party verification of their environmental disclosures**. These audits will ensure the **accuracy, reliability, and consistency** of green accounting data, thereby building investor confidence and improving stakeholder trust.

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