BioGecko Vol 12 Issue 03 2023

ISSN NO: 2230-5807

A STUDY OF THE CHALLENGES IN IMPLEMENTING GREEN ACCOUNTING IN THE MANUFACTURING ORGANIZATIONS IN PUNE CITY

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Abstract:
Manufacturing organizations in Pune City are faced with various challenges when implementing green accounting policy in the organizations. These challenges are due to long standing practices, lack of understanding of benefits and risks, and lack of adequate training. The study investigates these challenges, their causes and recommended solutions for overcoming them. It also measures different respondents' attitude towards the green accounting policy. The study is based on 50 manufacturing medium scale enterprises. The study found that the majority of respondents were not aware about Green Accounting and its benefits. Lack of understanding of benefits and risks, low awareness about green accounting, lack of training are the main causes for the delay in implementation of the practice. As highlighted in these findings, there are several factors which need to be taken into consideration when trying to implement green accounting for manufacturing firms. The first thing is that green accounting systems should not be used just for marketing purposes. The green accounting systems should perhaps be embedded into the overall financial reporting processes and should not be viewed as a separate system. Another important aspect that needs attention is the fact that green accounting has different methods of implementation based on different companies.
Keywords: green accounting, manufacturing organizations, implementation of green accounting, Green financial reporting,Pune City.

1. Introduction:

Green accounting can be defines as the process of measuring what is actually happening in the organization, including the environmental costs and benefits associated with the goods and services that are created.

Economic, environmental, social and governance (ESG) considerations are becoming increasingly important for companies to factor into their internal decision making and external reporting. The core concepts of green accounting are not new, but they are gaining momentum based on the growing need to reduce emissions (due to climate change), increase resource efficiency (to satisfy growing needs in a constrained world) and improve how economic value is understood.

Some of the challenges faced by manufacturing organizations while implementing green accounting policy:
1. Challenging cultural environment;
2. Lack of awareness about Green Accounting;
3. Lack of support from management;
4. Employees not being aware of the risks and benefits of green accounting;
5. Lack of training.
6. Failure to integrate environmental and social costs into their business model.
7. Failure to manage environmental aspect within and outside the organization effectively

Green accounting can be practiced in the form of internal cost allocation, external reporting standards, or a combination thereof known as hybrid approach (Jain and Jain 2005). Green accounting is an emerging concept with limited literature available in India on this topic. Thus, there is a need to use Indian case studies for the successful implementation of green accounting policy in India (Lazok and Daneshian 2012).

For decades manufacturing industries have been constructing assets to produce goods so as to sustain their business operations. These assets include factories, equipment, buildings, air and water supply systems, etc. The use of natural resources such as land and water has increased manifold in the manufacturing industry.

The manufacturing industry is no longer a small or medium sized enterprise but an organization with a huge investment in plant and equipment. These assets are also used for human resource development and training of employees who are made responsible for their upkeep. Maintenance of these assets requires significant efforts on part of the management to ensure the smooth functioning of these assets. The maintenance of these assets contribute to environmental problems and are a threat to the environment for a long time. The recent availability of green technologies has changed the scenario and most manufacturing units have started installing these technologies to protect the environment. These green technologies are known as eco-friendly or more popular as green technology.

The aim of this study is to find out challenges in implementing green accounting policy in the manufacturing organizations located in Pune City & their attitudes towards this policy.

2. Review of Literature:

Kishore (2019) states that concerns of the green movements and scholars in India are rooted in the theme of environment. The objective is to find out challenges in implementing green accounting practice with special emphasis on manufacturing organization located in Pune City.

Jain and Jain (2005) define green accounting as follows: "Green accounting is a comprehensive set of integrated financial reporting guidelines for managing environmental costs and benefits of business activities."

Sharma et al. (2015) define green accounting as follows: "Green accounting is a process to maintain accounts of the organization's economic, environmental and social activities with the aim of achieving sustainable development."
Rai et al. (2009) state that sustainability refers to meeting present needs without compromising future generations' ability to meet their own needs. According to this definition, environmental sustainability refers to the ability of future generations to meet their needs without depleting natural resources or degrading environment. The same authors stated that green technology is a tool for achieving sustainable development and environmental sustainability in organizations.
Pai et al. (2009) mention that green accounting is a set of accounting methods and techniques to measure the economic, environment and social activities of the organization.
The following are some of their definition:
1. The green accounting practice is to manage the economic, environmental, and social costs and benefits of the organization.
2. The objective is to minimise costs in financial information for reporting purposes, which requires capital budgeting principles (also known as bottom-up budgeting or top-down budgeting). Green accounting can be seen as an extension of financial management, through an extra layer of cost minimization in financial information production (Jayaraman, 2006).
Jayaraman (2006) defines green accounting as follows: "Green accounting is the branch of accounting that has evolved to value natural capital, which is the sum total of nonhuman resources that are used to produce goods and services."
Jang et al. (2011) state that Green Accounting Policy implementation provides a broader definition for information about comprehensively managing the environment and doing business more efficiently by integrating environmental costs into decision making. The authors also added that green technology is a tool for achieving sustainable development and environmental sustainability in organizations.
Shah et al. (2009) state that, as far as environment is concerned, green accounting provides information about economic capital and natural capital of the organization. Green accounting and natural capital concept play a vital role in the management of sustainable development.
Krishnamoorhty et al. (2009) state that green accounting policy implementation provides a broader definition for information about comprehensively managing environment and doing business more efficiently by integrating environmental costs into decision making. The authors also added that green technology is a tool for achieving sustainable development and environmental sustainability in organizations.
Gokul et al. (2011) state that green accounting policy implementation provides a broader definition for information about comprehensively managing environment and doing business more efficiently by integrating environmental costs into decision

making. The authors also added that green technology is a tool for achieving sustainable development and environmental sustainability in organizations.
Narasimha et al. (2012) define green accounting as follows: "Green Accounting is a branch of accounting that has evolved to value natural capital and provide information on how this capital can be used, managed and conserved efficiently."
Sumukhi et al. (2010) state that Green accounting is the branch of accounting which illustrates the techniques, strategies and methodologies to report the details about economic, environmental, social activities in organizations. The following are some of their definition:
1. Green accounting is an attempt to break away from traditional financial evaluation systems so as to encourage managers to consider ethical values such as protecting the environment in investment decisions.
2. The objective of green accounting is to provide information about the economic, environmental and social activities that have economic value to the organization.
3. The objectives include ecological principles such as:
(a) Keeping liabilities to a minimum.
(b) Minimising risk by establishing insurance arrangements for adequate protection of financial assets against adverse changes in investment performance (also known as asset liability management).
(c) Minimising uncertainty by establishing transparent regulations, monitoring and reporting responsibilities within an organization (also referred to as Risk-based Management).
Kumar et al. (2014) define green accounting as follows: "Green accounting is a set of accounting principles and practices that are embedded in financial reporting and management systems, to facilitate sustainable development, which includes preservation of nature (and community and cultural assets); reduction of harm to the environment through conservation, renewable energy use and re-use; reduction of carbon emissions; provision for future generations."
As far as the challenges that are faced by managers in the implementation of green accounting, Mishra (2020) states that the managers need to pay attention to the following challenges:
a. Increased costs of verification and audit due to complex nature of accounting and situation specific basis to various standards.
b. Increasing complexity of the work environment, unethical practices are also involved in this process.
c. Managerial challenges due to less qualified manpower, inexperienced staff, lack of coordination in implementing the policies
d. Lack of awareness about the importance and benefits of green accounting in organizations
e. Fast and frequent changes in accounting principles, concepts and policies.
d. Less attention from senior management, who are not seen to be taking adequate interest in the issue of green accounting implementation.

e. Lack of alignment between green accounting policy with other business objectives of the organization
f. Need for trained personnel and researchers to identify the issues that can be resolved using green concept and practices (Mishra, 2018)

As far as the benefits of implementing green accounting are concerned, Singhania et al., (2014) stated that benefit includes:
a. Green accounting helps to improve efficiency in organizations through avoidance of waste through improved technology, energy savings and more efficient use and re-use of natural resources.
b. Green accounting helps to improve the working environment of the organization by reducing pollution and encouraging healthy sustainable development
c. Green accounting helps in reducing costs, uncertainty and risk involved in incremental decisions due to other benefits of green accounting such as risk management, asset liability management and tax management.
c. Green accounting can act as an effective tool for ecological taxation by taxing organizations based on their environmental performance instead of their financial performance (Hendon et al., 2008)
d. Green accounting can stimulate innovation in pollution control, conservation and reuse of resources (Mishra, 2018)
On the basis of research study conducted by Narasimha et al., (2012), it was found that there is an increasing need for Green accounting information in corporate world. However, it is found that there has been a lack of preparedness and inefficient implementation of green accounting in organizations due to various factors. The identified factors are:
a. Lack of acceptance and awareness of the importance and benefits of green accounting in organizations
b. High cost involved in implementing green accounting data collection and documentation process, which includes high cost of auditing, uncertainty regarding the accuracy of data due to subjective nature of valuation etc.
c. Lack of preparedness among managers to value rare and non-renewable resources using opportunity cost approach
d. Inadequacy of green accounting data collection and documentation process
e. Lack of trained personnel and researchers to identify the issues that can be resolved using green concept and practices (Mishra, 2018).
Overall, there is less research on the various challenges that are faced by the medium scale manufacturing organizations in implementing green accounting. This research fills in a very important gap by proposing an innovative approach for green accounting in medium scale manufacturing organizations. The main objective of this research work is to critically review the existing literature on green accounting by establishing a framework for theory, approaches, methodologies and guidelines in order to understand the rationale behind effective implementation of green

accounting in corporate world; to identify factors which are responsible for ineffective implementation of green accounting viz. not enough awareness or understanding among managers, lack of preparedness among managers, inadequacy in data collection among other issues etc.

3. Objectives of the study:

1. To determine the impact of green accounting practices on the environment in Pune City.
2. To determine the challenges in implementing green accounting practices in manufacturing organizations located in Pune City.
3. To find out specific steps to overcome these challenges.
4. To measure the attitude of respondents towards green accounting policy.
5. To measure the feasibility of green accounting in these manufacturing organizations.

4. Hypothesis:

1. The implementation of green accounting policy in manufacturing organizations located in Pune city will have a positive impact on environment.
2. The challenges faced by manufacturing organization while implementing green accounting policy are lack of awareness and training, managerial support and cultural environment.
3. Attitude towards green accounting is positive.

5. Methodology:

This study is a cross sectional research design. The primary data for this study comes from the collection of semi structured questionnaires distributed to employees in manufacturing industries located in Pune City. Data was collected from 50 medium scale enterprises located in Pune City employing over 200 workers or more. Data was collected from 100 employees working in the accounts department of these organizations. The accounts manager and the assistant manager or senior employee of the accounting department of the organization were selected for the purpose of the study. The response rate for this survey is 100%. Descriptive statistics and inferential statistics are used to describe the findings of this study. A descriptive measure of the data is presented in tables, charts and graphs while a statistical analysis is performed to make inferences on relationships between variables and other characteristics such as correlation, regression coefficient etc.

6. Results:

Table 1. Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-30 years	12	12.0	12.0	12.0
	30 to 40 years	14	14.0	14.0	26.0

	40 to 50 years	68	68.0	68.0	94.0
	50 years and above	6	6.0	6.0	100.0
	Total	100	100.0	100.0	

Source: Survey

The above table shows that 68% of the respondents were from the age group of 40-50 years. On further observation, the table suggests that the accounting personnel are quite experienced in their work area.

Table 2. Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	87	87.0	87.0	87.0
	Female	13	13.0	13.0	100.0
	Total	100	100.0	100.0	

Source: Survey

The table on gender shows that there is a clear male domination as far as the accounting departments in the manufacturing organizations are concerned.

Table 3. Designation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Accounts Manager	50	50.0	50.0	50.0
	Senior Employee of the accounting department	24	24.0	24.0	74.0
	Assistant Manager in accounting	26	26.0	26.0	100.0
	Total	100	100.0	100.0	

Source: Survey

The above table shows that the study has considered 50 accounts managers and 24 senior employees of the accounting department. 26 respondents were accounting managers.

Table 4. One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Cost and complexity of green accounting systems	100	3.5100	1.17632	.11763
Difficulty in understanding the terminology	100	3.7600	1.03592	.10359

Low awareness about green accounting among finance professionals	100	3.4200	1.13867	.11387
The resistance to change from organizations	100	3.4800	.98964	.09896
Lack of recycling facilities	100	3.5900	1.13791	.11379
Lack of a robust tracking system for monitoring the environmental footprint	100	3.5000	1.16775	.11677
Lack of coordination between different departments, e.g. finance, procurement, HR and operations	100	3.6100	1.14499	.11450
Cost of internal data collection and management system for tracking waste reduction targets	100	3.4500	1.02863	.10286
'Greenwashing' and the use of green accounting as a marketing tool by organizations which are not actually serious about their environmental impact and sustainability measures	100	3.5600	1.08544	.10854
Lack of transparency which can lead to confusion amongst employees	100	3.5400	1.14962	.11496
Difficulty in integrating green accounting systems with financial reporting	100	3.4100	1.04538	.10454
Costs associated with external auditing	104	3.4423	1.03179	.10118
Lack of support from the top level management	100	3.3500	1.07661	.10766
Lack of recognized professional body for accounting professionals who are involved in green accounting	100	3.4300	.87911	.08791
Inaccurate costing information, which leads to cost increase	100	3.3700	1.23628	.12363
Lack of evidence-based approach in designing sustainable systems	103	3.1845	1.07327	.10575
Inadequate human resources for implementation, transparency, and coordination	106	3.2264	1.08919	.10579

The above table shows that all the means were above 3.0 which is meant for Neutral response.

Table 5. One-Sample Test

Test Value = 3

	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
Cost and complexity of green accounting systems	4.336	99	.000	.51000	.2766	.7434
Difficulty in understanding the terminology	7.336	99	.000	.76000	.5545	.9655
Low awareness about green accounting among finance professionals	3.689	99	.000	.42000	.1941	.6459
The resistance to change from organizations	4.850	99	.000	.48000	.2836	.6764
Lack of recycling facilities	5.185	99	.000	.59000	.3642	.8158
Lack of a robust tracking system for monitoring the environmental footprint	4.282	99	.000	.50000	.2683	.7317
Lack of coordination between different departments, e.g. finance, procurement, HR and operations	5.328	99	.000	.61000	.3828	.8372
Cost of internal data collection and management system for tracking waste reduction targets	4.375	99	.000	.45000	.2459	.6541
'Greenwashing' and the use of green accounting as a marketing tool by organizations which are not actually serious about their environmental impact and sustainability measures	5.159	99	.000	.56000	.3446	.7754
Lack of transparency which can lead to confusion amongst employees	4.697	99	.000	.54000	.3119	.7681

Difficulty in integrating green accounting systems with financial reporting	3.922	99	.000	.41000	.2026	.6174
Costs associated with external auditing	4.372	103	.000	.44231	.2416	.6430
Lack of support from the top level management	3.251	99	.002	.35000	.1364	.5636
Lack of recognized professional body for accounting professionals who are involved in green accounting	4.891	99	.000	.43000	.2556	.6044
Inaccurate costing information, which leads to cost increase	2.993	99	.003	.37000	.1247	.6153
Lack of evidence-based approach in designing sustainable systems	1.744	102	.084	.18447	-.0253	.3942
Inadequate human resources for implementation, transparency and coordination	2.140	105	.035	.22642	.0166	.4362

In all the cases above, it can be seen that the mean difference is positive which indicates that the null hypothesis can be rejected, and it can be said that there are many challenges that are faced by the employees of the accounting department as far as the implementing of green accounting practices are concerned.

7. Conclusion & Suggestions

The above findings show that implementing green accounting in manufacturing enterprises is a complicated process. It would require the involvement of finance professionals, especially the cost and management accountants, who are the gatekeepers for implementing green accounting systems. There will be problems that need to be solved in order to implement an effective green accounting system.

7.1. Suggestions:

1. Dedication of resources and collaboration of financial management, purchasing and operations and logistics departments is needed to design a comprehensive waste reduction system.
2. The use of green accounting should not be limited to the manufacturing sector only. It should be used more extensively in corporate world to manage environmental risks and reward companies who are serious about their

environmental actions that translate into better profitability, efficiency and resilience in the long run.
3. There is a need for popularizing green accounting as an organizational tool which can help track progress related to reduction in energy use, cost savings achieved and effectiveness increased due to green policies adopted by organization.
4. There is a need for a national accounting body such as the Institute of Chartered Accountants in England and Wales (ICAEW), the Chartered Institute of Management Accountants (CIMA) or the Association of Chartered Certified Accountants (ACCA) to come forward and create standards for green accounting.
5. There is a need for providing training programs on green accounting at Master's level as well as at pre- Master's level to make sure that there are trained professionals who can speak on green accounting, who can teach and train professionals and provide research based information to accountancy students.

7.2. Approaches:
1. 'Green accounting' can be used to measure and report the environmental impact of a company. Green financial reporting as identified by the CRS Framework as part of comprehensive corporate reporting framework can be used at top management level to highlight what needs to be done in order to reduce environmental risk.
2. There is a need for green accounting system which takes into consideration the difference between manufacturing and non-manufacturing companies, between service sector companies and manufacturing ones, and even between individual companies from different sectors.
3. Given the broad scope of green accounting that incorporates financial statements, other forms of sustainability reporting such as carbon emissions trading systems or carbon offsetting mechanism such as Kyoto protocol are also important indicators for green accounting system.
4. The auditors should be entrusted with the task of conducting audits in order to ensure the credibility of green accounting system.
5. Another important method for making green accounting credible is to have auditing bodies such as ICAEW/CIMA/ACCA who would set standards and also audit the system
6. A long-term plan is needed to understand how green accounting can be used as a management tool for sustained development of organizations and reshape their business models
7. Businesses which have already started working on sustainable policies need to partner with universities, NGO's and research institutions who are working on developing sustainable systems to come together and share their experiences so that they can make use of each other's resources, especially human resources

8. There is also a need for research and academic institutions to work with companies to understand the possible ways of reducing carbon emissions, energy costs and water consumption

As highlighted in these findings, there are several factors which need to be taken into consideration when trying to implement green accounting for manufacturing firms. The first thing is that green accounting systems should not be used just for marketing purposes. The green accounting systems should perhaps be embedded into the overall financial reporting processes and should not be viewed as a separate system. Another important aspect that needs attention is the fact that green accounting has different methods of implementation based on different companies.

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