



International Journal of Multidisciplinary Research and Growth Evaluation.

Factors affecting the effective application of green accounting for sustainable development at Vietnam's listed steel manufacturing companies

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Article Info

ISSN (online): 2582-7138

Volume: 05

Issue: 03

May-June 2024

Received: 10-03-2024

Accepted: 15-04-2024

Page No: 09-13

Abstract

Vietnam's listed steel manufacturing companies have expanded significantly in recent years, both in terms of number and size of operation. But the current economic downturn has hurt a lot of firms, leading to losses and even bankruptcies. Businesses in the steel sector continue to have poor business performance, in part because of the overabundance of steel as well as the management team's and the companies' executives' inadequate backgrounds and restricted access to financing sources. Low investment and inexperience in management... On the other hand, the steel manufacturing industry is an industry with a large amount of waste into the environment. For steel manufacturing businesses to develop sustainably, using green accounting tools is a useful solution. The article uses a combination of qualitative research methods and quantitative research to measure factors affecting the application of green accounting. Based on data collection from 13 steel production and trading enterprises listed on the Vietnam stock market by random selection, fake transactions data processing using SPSS26 software. Research results show that there are 3 groups of factors affecting the application of green accounting: (1) Factors belonging to Management Agencies, (2) Factors belonging to Professional Associations, (3) Business Factors. Based on the findings of the research, the article proposes solutions to improve the efficiency of green accounting operations in a sustainable development position at listed steel manufacturing enterprises in Vietnam.

Keywords: Green accounting, sustainable development, factors affecting green accounting operations

1. Introduction

The majority of economies now acknowledge the value of the environment, and environmental consciousness is rising. As a result, stakeholders have a strong desire to protect the natural environment for coming generations. Businesses, in particular, have concentrated on implementing greener practices. By assisting businesses in anticipating environmental effects or certain elements that may have an adverse effect on the environment, green accounting helps company managers and policymakers find solutions to mitigate these effects and address such effects. Businesses that successfully use green accounting will see a decrease in the amount of fuel, energy, and raw materials used in their operations and manufacturing. Reducing the usage of these inputs also helps companies reduce pollution to the environment, maximize the use of resources, and gain a competitive edge by cutting manufacturing costs. As a result, as sustainable practices are among the most crucial components of sustainable development, corporations must increasingly accept responsibility for their effects on the environment.

The manufacturing sector that produces steel carries a number of possible environmental contamination issues. Therefore, allocating significant resources for environmental preservation, rehabilitation, and restoration is a regular and long-term duty of steel production companies.

Under such circumstances, the emergence of green accounting is unavoidable in order to satisfy the demands for environmental data in unit operations from both a theoretical and practical standpoint. Thus, using green accounting successfully promotes sustainable corporate development. This article examines the variables influencing listed steel manufacturing companies in

Vietnam's use of green accounting in the context of sustainable development.

2. Research overview and theoretical basis

Overview

Asheim (1997) believes that it is necessary to establish a green accounting or environmental accounting system to help prevent environmental pollution or limit damages caused by environmental pollution through recording costs. environment to have resources for implementing treatment measures. This accounting system also needs to consider economic measures that impact electricity production and consumption in terms of impact on the environment.

According to Nguyen Thi Hai Van (2018) ^[8], green accounting is viewed as a development paradigm shift and a significant instrument for addressing the ways in which the environment affects the economy. sustainable, in the direction of building the green economy Vietnam seeks. Additionally, the author thinks that the professional association's training programs and promotional efforts help to advance the use of green accounting in Vietnam.

According to Duong Thi Thanh Hien, applying green accounting is a long-term process that requires implementation and investment research to create sustainable growth. Green accounting is a part of green growth, by people, for people, contributing to the stability of environmental and social resources for development.

According to Wu and Boateng (2010) ^[13], the implementation of green accounting in firms is contingent upon the size, expertise, and level of awareness of business administrators. According to Wachira (2014) ^[12], managers' worries about environmental preservation have an impact on how environmental expenses and green accounting are used in companies. According to Jalalludin *et al.* (2011) ^[6], there are a number of internal and external factors that affect how much green accounting is used by businesses. These factors include associations, professional organizations, environmental protection organizations, and managers' and accountants' awareness and credentials.

According to Dao Thi Thuy Hang (2019) ^[4], the use of green accounting helps to provide accurate, transparent, full, and responsible information, which helps to enhance a company's reputation among management teams, investors, shareholders, and business partners. The author also thinks that the use of green accounting is impacted by corporations' understanding of social responsibility.

According to the summary, scientists have shown that three categories of criteria influence the use of green accounting: Aspects affiliated with management firms; Aspects associated with trade groups business, Business-related Factors. This serves as the foundation for the author's solutions recommendations aimed at improving the overall and listed steel manufacturing firms in Vietnam's use of green accounting.

Theoretical basis

Agency theory

According to agency theory, stakeholders may be interested in an organization's environmental performance because it can affect the organization's long-term financial viability, reputation, and social responsibility position.

Agency theory further posits that ownership concentration can impact the amount of green accounting disclosure because it can reduce agency conflicts between stakeholders.

When ownership is concentrated, stakeholders have more influence over the management of the business, which can lead to greater accountability and transparency. Additionally, agency theory posits that financial decisions may signal a firm's commitment to sustainability, which may increase pressure to disclose environmental information. Therefore, when a business chooses financing methods that are consistent with its sustainability goals, it sends a strong signal to stakeholders about its contributions to society and the environment.

Stakeholder theory

According to stakeholder theory, businesses must operate in a way that benefits all stakeholders, including workers, customers, suppliers, communities, and the environment. Therefore, businesses must balance the interests of all parties, including stakeholders, employees, consumers and communities. Because they are more receptive to broader stakeholder needs, organizations with more inclusive ownership structures (including more stakeholders) may be more inclined to engage in sustainability activities sustainable and publish information about their environmental impact. Stakeholder theory is linked to the ability of a business to engage in sustainable business practices because it can also be affected by financial decisions, such as equity and debt financing.

Theoretical basis of green accounting

Green accounting concept

The United Nations first published a handbook on the "System of Environmental Economic Accounting" (SEEA) in 1993. In 2014, the United Nations continued to implement an application program called "Environmental Economic Accounting" (SEEA). and Environmental Accounting System" (Green Accounting) and countries around the world are required to apply green accounting in their business activities. According to financial experts, green accounting is one Modern, comprehensive accounting system that records, synthesizes and reports aspects related to an organization including assets, liabilities, investment capital, income sources, and environmental expenditures national green school.

Green accounting can be defined as an accounting method that uses accounts in SEEA, focusing on the depletion of scarce natural resources and transforming behavior towards the environment and social impact. on costs/revenues and profits in currency. Especially issues of costs, revenue and benefits related to the environment and society are increasingly concerned by many countries around the world. However, traditional accounting methods do not provide enough information for responsibility for sustainable development.

According to S. Sudhamathi, S. Kaliyamoorthy (2014), green accounting includes 3 main goals: (1) Identify, collect, calculate and analyze materials and energy-related materials; (2) Internal reporting and use of information on environmental costs; (3) Provide other cost-related information in the decision-making process, with the aim of making effective decisions and contributing to environmental protection.

Thus, it can be understood that green accounting is a modern and comprehensive accounting system to record, synthesize and prepare reports for an organization, to fully reflect the contents of assets and liabilities, investment capital, revenue

and expenditures for the country's green environment.

The role of green accounting in sustainable development of businesses

Green accounting helps provide information, check profits, revenues and environmental costs of businesses so that administrators can make production and business decisions. Applying green accounting will help enhance reputation and enhance the competitiveness of businesses. Green accounting helps provide more accurate, complete and comprehensive information to measure the implementation process, thereby improving the image of the business with stakeholders, helping businesses improve relationships with creditors, banks, shareholders, customers... Meeting international environmental standards helps businesses create commercial advantages and enhance reputation in the community by developing a "green" image.

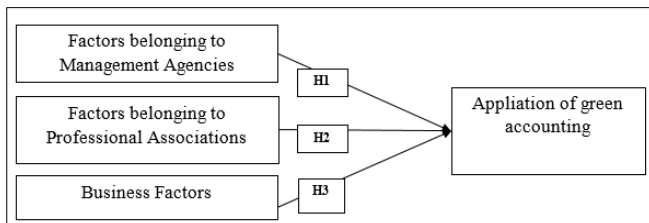
Good implementation of green accounting helps managers make important decisions such as reducing production costs, increasing productivity, investing in machinery and equipment for better, cleaner production, bringing better products. quality products, leading to reduced costs. This helps businesses have a competitive advantage in terms of selling prices and higher profits, and reduces legal problems. Green accounting helps accountants anticipate the environmental impacts some factors can cause to a business or organization, thereby helping business administrators and policymakers have Reasonable ways to deal with and solve problems. From there, it helps reduce environmental risks as well as public health risks, while improving management accounting and environmental finance at the enterprise level. Green accounting also helps improve the existing accounting system by organizing the accounting information system more scientifically and connecting the information flow of activities from different parts of the business.

Green accounting helps identify and provide crucial information about environmental costs and revenues. It also helps project owners and businesses make financially sound decisions by guiding them to use resources—including natural resources—efficiently and to reduce environmental damage by reducing waste and pollution and altering behavior that affects the environment.

3. Research Methods

Research model and hypothesis

From the research overview, the research team proposed the following research model:



Source: Compiled by author

Diagram 1: Research model

Research model with 3 research hypotheses

H1: Factors belonging to the management agency have a positive impact on the application of green accounting.

H2: Factors belonging to professional associations positively affect the application of green accounting.

H3: Business factors positively affect the application of green accounting.

Methods of collecting and processing data

To study the level of green accounting application, the article uses interview techniques and surveys. In the Interview Questionnaire, the author used semi-structured and unstructured questions. The author developed a semi-structured interview questionnaire including 5 questions related to assessing the role and level of green accounting application in businesses.

Based on the overall research results and the results obtained from the interviews, the research team built a questionnaire and distributed surveys using the Google Driver tool to administrators such as the Board of Directors, chief accountant, Accountant in listed steel manufacturing enterprises in Vietnam.

The smallest sample size should be 50, preferably 100, and the ratio of observations/measured variables should be 5/1. The author built 19 observed variables so the minimum number of samples is 95. In the study, the author distributed 120 survey questionnaires, and received 112 valid questionnaires. Valid questionnaires included in the analysis are entered and processed using SPSS26 software with main analysis techniques: descriptive statistics, scale testing, EFA testing, regression analysis. Finally, there is the presentation of the research results and the presentation of the article.

4. Results

An overview of Vietnam's listed steel manufacturing companies

There are now 13 firms listed on the Vietnamese stock market that are involved in the manufacture of steel; seven of these are listed on the City Stock Exchange, as per the listing floor. Six firms are listed on the Hanoi Stock Exchange (HNX) and Ho Chi Minh City (HoSE).

Table 1: Vietnam's list of listed steel manufacturing companies

ST T	Mã CK	Sàn niêm yết	Tên công ty
1	DTL	HOSE	Dai Thien Loc Corporation
2	HPG	HOSE	HPG Group
3	HSG	HOSE	Hoa Sen Group
4	ITQ	HNX	Thien Quang Group
5	KVC	HNX	Kim Vi Inox Import Export Production Joint Stock Company
6	MEL	HNX	Melin Steel
7	MHL	HNX	Minh Huu Lien Joint Stock Company
8	NK	HOSE	Nam Kim Steel Joint Stock Company
9	POM	HOSE	Pomina Steel Corporation
10	SHI	HOSE	Son Ha International Corporation
11	SSM	HNX	Steel Structure Manufacture Joint Stock Company
12	VGS	HNX	Vietnam Germany Steel Pipe JSC
13	VIS	HOSE	Vietnam – Italy Steel Joint Stock Company

Source: Collected from listed steel sector businesses' transaction data

The majority of listed steel manufacturing companies have modest design capacities, averaging between 200 and 300 thousand tons annually.

Small business scale stems from the limited financial capacity of the businesses themselves. Owners' investment capital is limited, so most businesses have to raise capital through debt, causing the debt ratio to always be high. Small

business scale is also an obstacle that makes it difficult for listed steel manufacturing enterprises in Vietnam to invest synchronously and modernly to meet the industry's requirements. This is a factor hindering the competitiveness and business performance of domestic steel enterprises.

Descriptive statistical results

The author conducted data processing and data analysis on 112 valid survey questionnaires obtained. The initial descriptive results are obtained:

Table 2: Description of general information of the research sample

		Frequency	Ratio (%)
Gender	Male	68	60.742
	Female	44	39.28
Age	Under 40 years old	18	16.07
	From 41 to 59 years old	64	57.14
	Up to 60 years old	30	26.79
The level of green accounting practices in enterprises	Not yet applied	55	49.11
	Have ever applied	32	28.57
	Applying	25	22.32

Source: Results compiled from SPSS 26

Through the descriptive statistics table, it can be seen that the level of green accounting application in enterprises is not high. Therefore, identifying factors that affect the application of green accounting at businesses is very important. On the basis of preprocessed data, the author conducted an analysis of factors affecting the application of green accounting at listed steel manufacturing enterprises in Vietnam.

Cronbach's Alpha test

All Cronbach's alpha coefficients of the variables were ≥ 0.6 , thus meeting the requirements to be included in factor analysis. At the same time, the total correlation coefficients of the observed variables all meet the requirement of ≥ 0.3 , ensuring that the given scales can be trusted in a statistically significant way.

Table 3: Reliability Statistics

The Scale	Observed variables	Cronbach's Alpha
Management Agencies	MA1, MA2, MA3, MA4	.768
Professional Associations	PA1, PA2, PA3, PA4, PA5	.771
Business	BN1, BN2, BN3, BN4, BN5, BN6	.692
Application of green accounting	GA1, GA2, GA3	.764

Source: Results compiled from SPSS 26

Table 6: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.431	.229	5.381	.000		
	MA	.562	.041	.393	10.809	.000	.793
	PA	.428	.034	.271	7.239	.001	.740
	BN	.536	.033	.263	7.037	.000	.815

a. Dependent Variable: GA

Source: Results compiled from SPSS 26

The linear regression model shows the impact of factors affecting the application of green accounting in businesses: $AGA = 1,431 + 0,562 * MA + 0,428 * PA + 0,536 * BN$

EFA exploratory factor analysis

The results of testing the data with $KMO = 0.702 (> 0.5)$, Sig of Bartlett's Test is 0.000, less than 0.05, showing that these observations are correlated with each other and completely consistent with factor analysis. Factor loading factor of the observed variables are all > 0.5 , the total variance extracted is 67.81% ($> 50%$) and the Eigenvalue coefficient = 1.254 (> 1). These tests were warranted for exploratory factor analysis. Thus, all the scales selected for the variables in the model meet the requirements and can be used in subsequent analyses.

Table 4: Rotated Component Matrix^a

KMO	0.702
Sig.	0
Eigenvalue	1.254
Cumulative %	67.81

Source: Results compiled from SPSS 26
Results of regression analysis

The results of the multivariate regression analysis of the study are as follows:

Table 5: Results of correlation testing of variables in the model

		MA	PA	BN
MA	Pearson Correlation	1	.159**	.165**
	Sig. (2-tailed)		.002	.002
PA	Pearson Correlation	.159**	1	.351**
	Sig. (2-tailed)	.002		.000
BN	Pearson Correlation	.165**	.351**	1
	Sig. (2-tailed)	.002	.000	
	Sig. (2-tailed)	.000	.000	.000

Source: Results compiled from SPSS 26

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.764 ^a	.584	.577	.49409	1.723

a. Predictors: (Constant), MA, PA, BN
b. Dependent Variable: GA

The results of the regression analysis of the model of factors affecting the intention to use T with 3 independent variables are as follows: Model fit test value sig. = 0.000 (< 0.05 shows that the variables in the model can explain the change in the dependent variable. From the above analysis, all 3 groups of factors are significant (sig < 0.05) and the model is as follows:

Regression analysis and the standardized regression equation show that three factors are positively correlated with the use of green accounting. B = 0.562 is the biggest coefficient for

the MA factor and $B = 0.428$ is the lowest for the PA factor among them. This demonstrates how management agencies' and businesses' characteristics have a big impact on how green accounting is used.

5. Conclusion

Manufacturing businesses are now required to undertake sustainable development. Businesses continually consider environmental challenges in order to expand responsibly. One of the modern business's most beneficial management tools is the application of green accounting. As a result, in order to assist businesses in finding practical solutions, it is essential to have a thorough understanding of the elements influencing the use of green accounting. Three categories of criteria that positively affect the degree of green accounting implementation in publicly traded steel manufacturing companies have been identified by the study.

The author suggests some ways to improve how green accounting is used in businesses:

For Companies

First and foremost, managers' understanding of environmental protection concerns and the function of green accounting must be raised. Administrators must, however, also draw attention to environmental cost aspects that are far less than the sum of money they must pay in taxes, fees, or fines resulting from ecologically detrimental behaviors.

To make wise investment decisions, company administrators want additional information on environmental expenses associated with commercial contracts. As a result, you may pursue project revenues while avoiding fines associated with environmental issues.

The level of administrators shows the difference in awareness of green accounting. Therefore, it is necessary to improve the level of managers. On the other hand, enhance the quality of accounting human resources. Currently, because green accounting is not popular in businesses, the business's accounting department has very few accountants with knowledge of environmental accounting or specialized environmental accountants. Therefore, in the coming time, businesses need to focus on training to improve the quality of accountants, while building an accounting department with capacity and experience in green accounting.

For state management agencies:

The state needs to widely propagate the benefits of environmental protection, thereby promoting environmental protection activities of businesses. Businesses that protect the environment well will have a good image among the public and consumers of that company's products and services.

It is necessary to maintain and further popularize environmental-related awards for businesses such as: "green business award", green technology award, gold cup for environmental cause, Vietnam environmental award.

The state needs to improve the legal system on environmental protection and sanctions.

For Vietnamese firms, the Ministry of Finance ought to release a green accounting framework as well as particular implementation guidelines for green accounting.

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