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Factors Affecting Environmental Accounting Practices: A Case Study of Food and Beverage Enterprises in Vietnam*

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Abstract

The article analyzes the impact of factors affecting the environmental accounting of enterprises in the food and beverage industry in Vietnam, providing more empirical evidence on factors affecting environmental accounting. The research method uses a questionnaire survey of managers at all levels, chief accountants, and cost accountants, of 56 enterprises in the food and beverage industry. The survey results collected 268 questionnaires. After eliminating the invalid questionnaires due to many blank cells, the author chose to use 236 questionnaires. Quantitative research was carried out with SPSS 25 software. Research results show that all 6 factors positively affect environmental accounting, which includes Firm size, Stakeholders, Awareness/Knowledge of leaders, financial resources, Qualifications of staff, and Regulations, in which stakeholders and leaders' perceptions are the most influencing factors. Based on the research results, the author has proposed recommendations to improve the ability of enterprises to successfully implement environmental accounting in the food and beverage industry, thereby contributing to improving the operational efficiency of the food and beverage enterprises. The Vietnamese market is very potential, so the Government, authorities, customers, investors, etc., contribute to creating significant pressure to implement environmental accounting in food and beverage enterprises.

Keywords: Environmental Accounting, Food and Beverage Enterprises, Vietnam

JEL Classification Code: M41, P28

1. Introduction

Green growth has been a global trend, with an important content being sustainable economic development. Sustainable development is defined as economic development that demands a reasonable, close, and harmonious relationship with society, the environment, and current economic progress while avoiding negative repercussions or future threats. Wendisch and Heupel (2005) assessed the importance of environmental accounting and the calculation of environmental costs for businesses. This is considered a step forward for the development of environmental accounting (Tsai et al., 2010). For the business enterprise, sustainable development means adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining, and enhancing the human and natural resources that will be needed in the future Environmental accounting provides environmental and costs information to managers to assist in formulating policies to operate business activities to increase economic efficiency and enhance the environment to meet objectives of sustainable development.

The food and beverage industry belongs to the group of fast food and beverage industries, which is always one of the most important economic sectors with great potential for development. According to forecasts, the food and beverage industry in Vietnam will have a growth rate of 5–6% in the period 2020–2025. However, changes in consumption habits and the COVID-19 "shock" are reshaping the food and beverage industry, requiring businesses to have a coping strategy. The change in consumer behavior becomes the driving force in the market, forcing businesses to develop

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strategies to adapt to the new situation. Many businesses have actively changed their production and business thinking in the new context by investing in modern machinery and equipment, focusing on product quality and design to conquer regional and global markets. Currently, Vietnamese food and food products are mainly exported to the United States, China, ASEAN, the EU, and Japan. Consumer demand for processed foods is increasingly large and diversified, especially in nutritional products, of organic origin. It is an opportunity for Vietnamese enterprises to continue to invest and develop. Environmental accounting becomes a tool to help managers run their businesses better, reduce and control costs more effectively, bringing not only financial benefits but also a competitive advantage. There is huge competition for businesses and especially food and beverage businesses in the current globalization problem.

In that context, environmental accounting is an important tool to help business administrators successfully implement environmental accounting for the purpose of sustainable development. Environmental accounting has been successfully applied by many businesses around the world, but it is still quite new to Vietnamese businesses. This study aims to examine the influence on the successful implementation of environmental accounting in Vietnam, thereby making some recommendations for businesses to successfully implement environmental accounting.

2. Background Theory and Literature Review

Contingency Theory: Contingency theory emphasizes the role and influence of situational factors on the performance of businesses (Lawrence & Lorsch, 1967). The theory explains the relationships between the influencing factors and the results based on analyzing the behavior and activities of the enterprise, and at the same time explaining the specific situational factors, such as environment, technology, experience, and size, can affect the above relationship. Successful businesses must have an organizational structure that matches the complexity of the environment they operate in. In this study, the author uses theory to evaluate the size, policies, and qualifications of the employees of the business that affect environmental accounting in the food and beverage industry.

Theory of legitimacy: The theory of legitimacy holds that an organization's activities must conform to the values or social norms in which it operates; The failure of organizations to adhere to social values or norms can make it difficult for the organization to gain public support to continue operating (Weber, 1922; Dowling & Pfeffer, 1975). The theory of legitimacy also proves that the provision of business information is very important because it affects the survival of the business, followed by the enterprise implementing business strategies to achieve its goals (Chang, 2007).

Stakeholder theory: Bowen (1953) was the first to introduce the concept of social responsibility as the obligation to fulfill and balance the value of social benefits of the organization, which will be perceived by their stakeholders. Instead of caring about the wider society, businesses should care about and manage relationships with stakeholders (Clarkson, 1995). Sharing this view, Mandhachitara and Poolthong (2011), and Pérez and Del Bosque (2013, 2014, 2015) also argued that the main target audience of social responsibility that businesses need to pay attention to are stakeholders. Stakeholder theory is considered one of the central theories that underlie the development of the research field of social responsibility. Freeman (1984) stated that stakeholders are individuals or groups (eg: customers, employees, owners of the business, communities, shareholders, etc.) who can influence or be affected by an organization's mission realization.

Besides theoretical studies, studies on factors affecting environmental accounting also interest many authors in the world.

Juhmani (2014) investigated the level of social and environmental information disclosure practices in websites of companies listed on Bahrain Bourse to determine the influence of firm size, profitability, financial leverage, firm age, and audit firm size on the level of social and environmental information disclosures under legitimacy theory. To achieve the aims of this study, content analysis and statistical analysis were used. To determine the factors that explain the level of social and environmental information disclosures, descriptive statistics and multiple regressions analysis were used. The findings indicated that 57.57% of the sampled listed companies provided social and environmental information in their 2012 annual reports and their websites. Commercial banks and insurance companies made the most disclosure of social and environmental information, while the least disclosure was made by companies in the hotels and tourism sector and industrial sector. Multiple regression analysis revealed that financial leverage and audit firm size had a significant relationship with the level of social and environmental information disclosure.

Mohd Khalid (2012) investigated the extent of EMA implementation in environmentally sensitive industry enterprises in Malaysia, as well as gaining a better understanding of the level of implementation. Research results showed that there are environmental factors related to management accounting in some of the organizations for which the interviews were conducted. Implementation is motivated by cost reduction rather than environmental conservation. In addition, companies' responses to environmental issues stem from pressure from customers demanding environmentally sensitive workplaces, processes, and procedures within the companies they do business with.

Alkisher (2013) examined the factors that influenced Environmental Management Accounting (EMA) adoption. Specifically, it investigated the influence of the dominant factors in the organizational, environmental and technological contexts on firms' intentions to adopt EMA. To achieve this objective, eight hypotheses were formulated, with information from previous research and the TOE framework, the TAM model, the contingency theory, the institutional theory, the legitimacy theory, the stakeholder theory, and the diffusion of the innovation theory. To examine these hypotheses, data was collected from financial directors and environmental managers in the oil and the manufacturing firms in Libya, who constituted the sample of this research, by using a researcher-administered questionnaire. A total of 202 usable questionnaires was collected and the data was subjected to tests of variances, factor analysis, correlations, and multiple regression. The results revealed that age, education level, and tenure in position were among the influential factors on firms' intention to adopt EMA. The results also showed that Libyan firms in the selected industries were dominated by defender strategy and hierarchy culture, which favored a centralized management style. However, these practices had a negative influence on firms' intention to adopt EMA. Furthermore, the results also revealed that organizational, environmental and technological variables significantly influenced firms' intention to adopt EMA.

Bartolomeo et al. (2000) reported and analyzed the results of a trans-European project to investigate the present and potential future links between the environmental management and management accounting functions of a company or business. A taxonomy of four broad but distinct approaches to environmental accounting was identified from the literature: external financial reporting; social accountability reporting; energy and materials accounting; and environmental management accounting. This project focused on the latter generation, analysis, and use of financial and related non-financial information to support management within a company or business, in integrating corporate environmental and economic policies and building a sustainable business. The research involved interviews with accountants and environmental managers at eighty-four companies in Germany, Italy, The Netherlands, and the UK, and detailed case studies of fifteen companies in those four countries. The paper summarized the findings of the research and their implications for four core hypotheses, and goes on to discuss international differences, and concluded by reviewing the implications of the results for likely future developments.

In Vietnam, there have been some recent studies on environmental accounting such as Nguyen (2020a) who studied factors influencing environmental accounting information disclosure of listed enterprises on Vietnamese stock markets, Nguyen (2020b), who studied factors affecting environmental accounting implementation in mining enterprises in Vietnam, and Tran et al. (2020), who studied environmental management accounting perception and implementation in the automobile industry in Vietnam.

3. Research Methods and Models

3.1. Research Method

The research method used includes a survey through a questionnaire of businesses in the food and beverage industry to assess the factors affecting environmental accounting. Environmental accounting, business size, stakeholders, audit, financial resources, staff qualifications, and regulations are measured on a five-point Likert scale (Very good, good, average, poor, bad). The 5-level Likert scale is familiarly used in many studies, which is a type of psychometric response scale in which responders specify their level of agreement to a statement typically in five points. So, the author also quantifies each factor according to five levels. Quantitative research was carried out with SPSS 25 software.

The scope of the study is businesses in the food and beverage industry. Face-to-face and email interviews with employees in all positions, managers at all levels, chief accountants, and accountants are used to collect research data. In the food and beverage industry, there are 56 companies. The findings of the study yielded 268 questionnaires. After eliminating the invalid questionnaires due to many blank cells, the author chose to use 236 questionnaires.

3.2. Research Model and Research Hypothesis

From the research overview, the proposed research model is as follows:

$$EA = \beta_1 + \beta_2 \times SZ + \beta_3 \times RP + \beta_4 \times LP + \beta_5 \times FR + \beta_6 \times SQ + \beta_7 \times RE + E$$

To assess the impact of factors on environmental accounting in enterprises in the food and beverage industry in Vietnam, the study uses 6 detailed hypotheses as follows:

H1: *Firm size has a positive relationship with environmental accounting in food and beverage businesses.*

H2: *Stakeholder pressure has a positive relationship with environmental accounting in food and beverage businesses.*

H3: *Acceptance Leadership knowledge has a positive relationship with environmental accounting in food and beverage enterprises.*

H4: *Financial resources have a positive relationship with environmental accounting in food industry enterprises beverage.*

H5: *Employee qualifications have a positive relationship with environmental accounting in the food and beverage industry.*

H6: *Regulations have a positive relationship with environmental accounting in the food and beverage industry.*

4. Research Results

4.1. Testing the Scale

The results of evaluating the reliability of the scale by Cronbach's Alpha show that all scales have reliability greater than 0.6 and the correlation coefficient of the total variable is greater than 0.3. All scales satisfy the conditions for exploratory factor analysis. The reliability of the scales is summed up in Table 1.

4.2. Exploratory Factor Analysis (EFA)

EFA was performed with Principle Component extraction with Varimax rotation for the dependent observed variable. The results show that the coefficient KMO = 0.753 (condition > 0.5); Significance level and Barlett test = 0.000 (meet condition < 0.05), which show that EFA analysis is appropriate. The total variance extracted is 62.619% > 50%, and factor loading of the factors are all greater than 0.5, so they are satisfactory. The official scale after EFA processing includes 22 observed variables as proposed (Table 2).

4.3. Regression Analysis

Adjusted R^2 reflects the degree of influence of the independent variables on the variation of the dependent variable. In this case, 6 factors (Business size, Stakeholders, Leadership perception, Financial resources, Qualifications of staff, and Regulations) affect 56.4% of the environmental accounting performance in enterprises in the food-beverage industry. The Durbin-Watson coefficient is 1.931, in the range from 1.5 to 2.5, so there is no first-order sequence autocorrelation (Table 3).

Table 2: Results of EFA Analysis

	Factor					
	1	2	3	4	5	6
SZ4	0.910					
SZ3	0.839					
SZ2	0.839					
SZ1	0.770					
RP3		0.781				
RP2		0.776				
RP4		0.720				
RP1		0.690				
RE1			0.817			
RE4			0.770			
RE2			0.751			
RE3			0.712			
LP3				0.758		
LP1				0.755		
LP2				0.752		
SQ1					0.784	
SQ2					0.778	
SQ3					0.648	
FR4						0.802
FR3						0.658
FR2						0.643
FR1						0.607

Table 1: Scale Test Results

No	Variable Name	Symbol	Number of Observed Variables	Cronbach's Alpha	Smallest Total Variable Correlation Coefficient
1	Firm size	SZ	4	0.869	0.640
2	Stakeholders	RP	4	0.795	0.540
3	Get knowledge of leaders	LP	3	0.715	0.454
4	Financial resources	FR	4	0.618	0.344
5	Qualifications of staff	SQ	3	0.670	0.370
6	Regulations	RE	4	0.770	0.516
7	Environmental accounting	EA	6	0.832	0.565

To check if the regression model is consistent with data sets collected, as well as if it has a meaningful application or not, the authors continue testing the suitability of the model through accreditation ANOVA as follows (Table 4).

Sig test $F = 0.000 < 0.05$, so the regression model evaluates the influence of 6 factors (Business size, Stakeholders, Leadership awareness, Financial resources, Employee qualifications, and Regulations) on the ability to implement environmental accounting in the food and beverage industry.

The model's *F*-statistic has a Sig value. = 0.000 < 0.05, which shows that the model fits the data set and can be generalized. The VIF coefficients are all less than 2, so there is no multicollinearity between the components that do not appear in the research model.

The regression results of the impact of 6 factors on the accounting environment of corporate food and beverage are shown in Table 5.

The sig test value for each independent variable is < 0.05: all variables are significant in the model.

Beta coefficients are all positive: all variables have the same effect on the dependent variable (Figure 1).

The regression model is written as follows:

$$EA = 0.277 + 0.137SZ + 0.350RP + 0.254LP + 0.033FR + 0.105SQ + 0.041RE + E$$

Table 3: Statistical Results of Factors

Model	Model Summary				
	R	***R* Squared**	***R* Squared Corrected**	**Estimated Error of Standard Deviation**	**Durbin Coefficient - Watso**
1	0.758[a]	0.575	0.564	0.66263	1.931

[a]Predictors: (Constant), RE, RP, FR, SQ, SZ, LP; [b]Dependent Variable: EA.

Table 4: Suitability Test (ANOVA)

Model		Sum of Squares	df	Mean Square	*F*	Sig.
1	Regression	60.967	6	10.161	23.142	0.000[b]
	Residual	100.548	229	0.439		
	Total	161.515	235			

Table 5: Regression Results

Coefficient								
Model		Unstandardized Coefficients		Standardized Coefficients	*t*	Sig.	Multiple Statistics	
		B	**Std. Error**	**Beta**			**Tolerance**	**VIF**
1	(Constant)	0.277	0.522		0.531	0.596		
	SZ	0.122	0.049	0.137	3.464	0.000	0.879	1.138
	Rp	0.373	0.065	0.350	5.753	0.000	0.733	1.364
	LP	0.282	0.066	0.254	4.266	0.000	0.768	1.302
	FR	0.043	0.068	0.033	4.624	0.000	0.980	1.020
	SQ	0.156	0.084	0.105	6.870	0.000	0.865	1.157
	RE	0.043	0.056	0.041	3.768	0.000	0.961	1.040

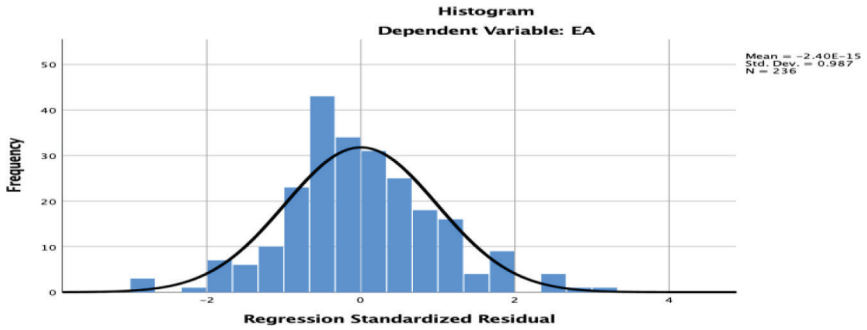

Figure 1: Standardized Residual

5. Discussion and Recommendations

5.1. Discussion

Based on the results of quantitative research on factors affecting environmental accounting of enterprises in the food and beverage industry, the following conclusions can be drawn:

$$EA = 0.277 + 0.137SZ + 0.350\ RP + 0.254LP + 0.033FR + 0.105SQ + 0.041RE + E$$

The multiple linear regression equation extracted by the standardized Beta coefficient shows that the factor stakeholders have a higher standardized Beta coefficient (0.350) relative to all other factors. The standardized beta coefficients of the remaining factors are Enterprise size (0.137), Leadership awareness (0.254), Financial resources (0.033), Employee qualifications (0.105), and Regulations (0.041).

Thus, stakeholders and leaders' perceptions are the factors that have the strongest influence on the environmental accounting of businesses in the food and beverage industry. This can be explained that, for businesses in the food and beverage industry, stakeholder pressure and the perception of good leadership will positively affect environmental accounting performance.

5.2. Recommendations

From the results of the study of factors affecting environmental accounting of businesses in the food and beverage industry, the author makes some recommendations to apply environmental accounting, thereby contributing to improving environmental accounting and the operational efficiency of food and beverage enterprises.

Stakeholders, as a factor, have the greatest impact on environmental accounting of businesses in the food and beverage industry, and the results are similar to those of Bartolomeo et al. (2000) and Mohd Khalid et al. (2012), who showed that stakeholders such as customers, government, and others have an impact on environmental accounting. Hence, it is clear that stakeholder pressure is critical for environmental accounting; business stakeholders' interests are a driving force, a pressure, or a compulsion for food and beverage companies to perform environmental accounting. Moreover, the authorities' role is very important; they must regularly oversee the production of food and beverage firms to guarantee that they do not create harm or pollution. The product must be transparent in terms of the environment. The Vietnamese market is very potential, so the government, authorities, customers, investors, etc. contribute to creating significant pressure to implement environmental accounting in food and beverage enterprises.

Leadership perception has a positive impact on environmental accounting and has a relatively large impact. This result is consistent with the opinion of experts who stated that leaders perceive the usefulness of environmental accounting. Environmental accounting will increase in importance among leaders who have a clear philosophy of environmental protection, a desire to use environmental accounting information, and a thorough understanding of environmental accounting. Emissions, wastewater, and waste from the food and beverage industry have a significant impact on the surrounding air, water, and soil environment. Furthermore, while globalization presents opportunities for Vietnam's food and beverage industry, it also poses numerous problems. Hence, if business leaders in the food and beverage industry lack awareness or a clear understanding of sustainable business and production to ensure profits, it will inevitably result in environmental pollution, and environmental accounting will be nearly impossible to achieve because business leaders do not recognize the benefits of environmental accounting and economic benefits to achieving it.

In addition, the remaining factors such as business size, financial resources, staff qualifications, and regulations all have a positive impact on environmental accounting with

different levels of impact. Enterprises with large scale have better ability to apply environmental accounting because the conditions of the enterprise's scale such as the number of employees, capital, etc., partly affect the implementation of environmental accounting in the food and beverage industry. In addition, financial resources and good staff qualifications are also conditions for high-efficiency environmental accounting in the food and beverage industry. To apply environmental accounting effectively, it is necessary to have the participation of State agencies to develop more specific sets of standards, regulations, and guidelines as a basis for environmental accounting and management accounting in the country.

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