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The Perspective Of Full Cost Accounting Of Sustainability In Business

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Abstract

Purpose - The article presents a new approach to implementing cost accounting in enterprises. By applying the Full Cost Accounting (FCA) approach, accounting has shown the additional external costs adding to the traditional costs of the business. FCA shows external factors' effects on the company's costs, internalizing external costs. FCA also indicates the burden of external costs on a firm's total costs and profits. At the same time, FCA also shows businesses' environmental and social impacts.

Methodology - We conducted univariate and multivariate regression analyses. By synthesizing questionnaires, using correlation analysis and multivariate regression analysis, we identify and measure the influence of factors on the application of FCA in several enterprises.

Findings- Our research finds a new approach, which is the application of FCA in enterprises, linking and internalizing external costs, and assessing enterprises' impact on environmental and social sustainability. The article also shows the correlation and influence of factors on the application of FCA.

Social implications - The article guides how to apply FCA in business. This is one of the measures to effectively use resources, contributing to sustainable development for businesses and society.
Keywords - Full Cost Accounting (FCA), external costs, internal cost, eco-costs

1. Introduction

Full Cost Accounting (FCA) is a model used to measure all costs, including costs incurred within the business and social costs. External costs (social costs) describe the monetary impact on human health and the environment, which are not currently reflected in the results and are excluded from traditional accounting.

Methods of allocating resources to different goals in an enterprise are the primary means of providing information in accounting. The term resource includes financial, technical, and human resources. Resources are allocated and used most effectively by decision-making managers.

The resource information should be compared between actual, estimated, and allocated costs. This information is extracted from social and environmental accounting – an effective communication interface between businesses and the public sector. The debate about the recognition of external factors in the analysis and decision-making of managers has always been a challenge for economic actors. At that time, a series of questions are raised: What needs to be measured, and how can a department be created and contribute to achieving business goals? Senior leaders need to define objectives through strategic planning and operational and control policies and promote the adoption of measures at different levels of the organization. Therefore, the use of actions to achieve the goals, vision, and values intended by the enterprise is ensured at all levels of the organization to eliminate inefficient parts, no longer converging with sustainable development in the context of minimizing destructive impacts on the outside.

Towards the end of the 20th century, as the threat of global warming spread, studies in the direction of FCA intensified. The idea of decision-based accounting that integrates information on environmental influences has emerged according to the studies of Milne, B.T., 1992.

Rubenstein, D. B. (1992) introduced the idea that environmental influences in enterprises' activities can reduce enterprises' value-added and profits. In the 1990s, much research on FCA tools and practices emerged and reigned. Bebbington, J., Gray, R., Hibbitt, C., & Kirk, E. (2001) analyzed the relevant literature and made four points:

- The application of FCA has completed the knowledge of the operation of an organization and helped the business to change some premises or the way it operates;
- Some measures for sustainable development may deviate from the goal
- Adding external costs to an income calculation significantly affects an organization's bottom line and can turn profits into losses.

FCA can help businesses comprehensively view the costs that have been incurred and may arise related to the business's responsibility to society.

The article clarifies FCA approaches, the meaning of applying FCA in enterprises, and factors affecting the application of FCA to reflect and measure the sustainable development of enterprises. Does the article answer the question: (1) What factors affect the application of FCA in enterprises? (2) How much influence do these factors have on applying FCA?

2. Litterature reviews

Economic sustainability achieved through the interaction of society and the environment, characterized by indicators of ecological efficiency, is the best positioning of financial and environmental potential. Eco-efficiency also helps the authorities in public and private organizations to make decisions, especially the stakeholders that need this information (Bebbington, J., Gray, R., Hibbitt, C., & Kirk, E. (2001).

Full cost accounting (FCA) combines environmental and other internal costs with external influences to measure metrics such as costs/benefits in an organization's operations related to the environment and human health. Traditional accounting is mainly based on economic considerations. Determining FCA only takes into account internal costs and costs affecting profits. External costs (social costs) describe the monetary effects on human health and the environment, which are not currently reflected in the results and are excluded from traditional accounting. Monetized external impacts can manifest in money and increase the FCA. In contrast, non-monetized external impacts are only qualitative descriptions because there are scientific limitations that cannot be expressed in terms of their impact on the environment: environment and human health.

Antheaume N. (2004) observed that there could be no comparison between the external costs sustained or generated by entities due to the differences in the measurement methods used and the externalities taken into account.

FCA is recognized as an external accounting approach. The measurement of externalities is complicated and controversial in the FCA, especially since the issue of sustainable development attempts to address fundamental social problems that are incompatible when studied from a different perspective on the currency level.

The so-called externality occurs when the company's activities related to the economy, society, and environment affect one or more other entities without being recognized or compensated by the entity that caused them. This is the basis for the conditions imposed on long-term sustainable technology to explain depreciation or capital revaluation. At the beginning of the 3rd millennium, there was a proliferation of studies assessing external impacts on energy, agriculture, transport, and urban development (Markandya, A., & Tamborra, M. L.,2006).

The Environmental Protection Agency [EPA] (1996) argues that FCA, from the perspective of environmental costs, is a cost that has a direct financial impact on

the business (internal costs) and costs to individuals, society, and the environment the company is not accountable for (external costs) (Parry, R. (1998).

The environmental cost in environmental governance terminology is defined in many different ways. Grzebieluckas, C., Campos, L. M. D. S., & Selig, P. M. (2012) argue that the term is often used to refer to: (1) costs incurred as required by law and regulations, (2) costs incurred to reduce or eliminate excluding the release of hazardous substances, (3) all other costs related to the business's operations to minimize its environmental impact, (4) costs associated with not addressing the problems above. Around the world, many countries have made efforts to reduce environmental impacts by deploying technologies for clean products and services. In Europe, the Best Available Techniques Not Entailing Excessive Costs (BATNEEC) evaluated the manufacturing process. They investigated potential improvements to reduce the environmental impact (Van den Ende, C. H. M., Breedveld, F. C., Le Cessie, S., Dijkmans, B. A. C., De Mug, A. W., & Hazes, J. M. W., 2000). All of these green procedures incur costs called an expression of economic consumption (the so-called conventional or usual costs) and additional expenditures that measure the environmental impact and are recognized as eco-costs.

Joshi, S., Krishnan, R., & Lave, L. (2001) studied how the accounting system recognizes all costs associated with environmental regulation. Based on empirical research, the authors explained that inadequate identification of eco-costs greatly influenced the disclosure of economic, social, and ecological impacts required by law.

Eco-costs are costs that aim to reduce the environmental impacts of pollution to a sustainable level and are not included in the regular product cost. These are virtual costs related to the measures that need to be taken to make the product, and the product itself ensures society's sustainability. Currently, many companies have been designing and manufacturing to implement environmental issues such as Life Cycle Assessment (LCA) (Zutshi, A., & Sohal, A. S. (2004).

Poeschl, Ward, & Owende (2012) argue that LCA is a scientific approach alongside current corporate environmental policies and decisions to achieve sustainable production and consumption. In particular, LCA is a product-related environmental impact assessment method

3. Theoretical framework of research

3.1. FCA, which environmental costs

FCA focuses on three high costs that are relatively easy to determine. These are up-front costs, operating costs, and back-end costs. Other costs that can be included in the scope of FCA but require special consideration are remediation costs at inactive sites, contingent costs, environmental costs, and social costs.

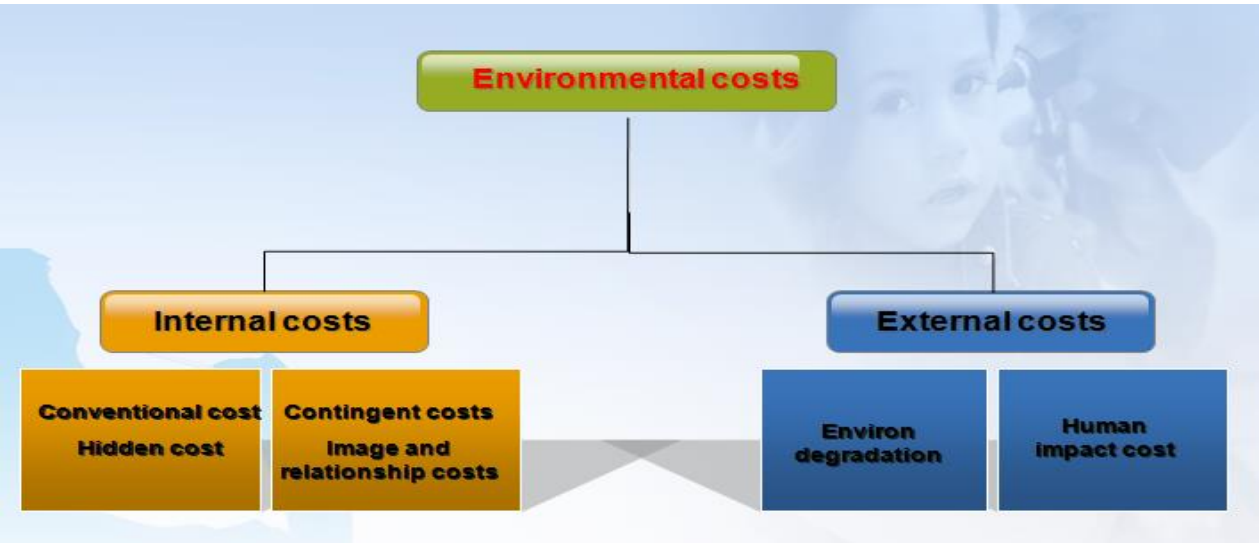

Figure 1: Summarizes the types of environmental costs

Internal costs may include conventional costs, potentially hidden costs, contingent costs, and image or relationship costs (Steen, B., 2005):

• Conventional costs include costs of capital equipment, raw materials, and supplies;

• Hidden costs refer to the results of assigning environmental costs to general overheads or of shared future events with environmental effects;

• Contingent costs relate to uncertain future environmental costs that are dependent on uncertain future events such as future oil spill remediation costs;

• Image and related costs are not usually tangible costs because they are affected by subjective perceptions of management, customers, employees, communities, and regulators. These costs may include costs in the annual environmental report and costs related to community activities, which are voluntary expenditures on environmental actions. These costs are not intangible costs; the direct benefits arising from the relationship and the business's image are tangible.

External costs include: (1) environmental degradation (e.g., depletion of natural resources, noise, and esthetical impacts, residuals air and water emissions, long-term waste disposal) for which companies are not legally responsible, and (2) adverse effects on human beings, their property and their welfare (e.g., irreparable effects on health, change in the quality of life of local people) are not always compensated by the legal system. For example, damage to a river due to the discharge of polluted wastewater, the ecosystem from the discharge of solid waste, or cancer due to air emissions. All these costs are external costs that businesses often do not pay attention to (Quah, E., & Boon, T. L., 2003). Determining the financial value of external costs is difficult. However, some businesses are trying to address these costs, recognizing them as part of their environmental accounting system.

Conventional management accounting systems often allocate environmental costs to general overheads accounts, resulting in managers having no incentive to reduce environmental costs, and executives are unaware of the range of prices. To correctly identify, assess and allocate environmental costs, environmental accounting enables managers to recognize opportunities for cost savings (Fenwick, E., Claxton, K., & Sculpher, M., 2001). Environmental costs should be allocated directly according to relevant cost drivers, especially for activities that cause costs. For example, the cost of hazardous waste in production should be given now and separately to the product. Understanding cost drivers and proper cost allocation are the basis of activity-based costing (ABC) instead of the

traditional accounting system. The strength of the ABC method is in increasing understanding of the business processes associated with each product. The ABC method is applied in internal cost calculation by allocating costs commonly known as overheads to polluting activities and outcomes determined by quantitative life cycle assessment procedures.

The total environmental cost accounting system incorporates a product life cycle assessment as part of a product or assessment process, making it possible to assess the entire life cycle of a product. That way, the product's whole environmental and social aspect is laid out from the extraction of raw materials to the final stages of the product's production. This helps businesses fully understand the costs incurred concerning the environment and human health and related impacts and account for internal and external costs. Quantitative life cycle assessment related to environmental accounting systems requires quantifying the value of the ecological effects of a firm's activities (Brner, J., & Wunder, S., 2008).

Coupling quantitative life cycle assessment to an environmental accounting system provides a comprehensive view of the environmental impact of projects. It shows a concrete picture of environmental trade-offs with related financial aspects during the production of the product (Posner, E. A., 2001).

The direct result is the management of the production process to produce products that meet the sustainability goals of the business. The global economy that operates under market pressure often does not adhere to ecological principles. From an economic point of view, the price included in the environmental cost does not recognize the impact on the environment. This aspect generates decisions that are not suitable for a sustainable ecosystem. The experience of countries such as Japan and Australia, which do not benefit much from the natural environment, shows that a healthy economy that meets the needs of the present without compromising the future can only be achieved under ecological equilibrium conditions. The goal of eco-costing is to internalize external factors and participate in the global performance from the environmental balance in corporate governance (Gale, R. J., & Stokoe, P. K., 2001) to:

• To allow the external costs a company creates for society must be included in the total cost to calculate profit.

• To bring external costs considerations into the corporate decision-making process;

• To ensure the existence of the organization through understanding potential liability and risk scenarios;

• To inform stakeholders on the environmental and health impacts of the organization's economic activities.

Ecological costs generate monetary estimates of the environmental impacts resulting from business operations. The approach from economic theory is the damage cost approach, which assesses the value of the damage caused by the business. The damage cost approach estimates externality costs based on the loss of using value. However, suppose economic actors take or are required to take measures to minimize environmental damage to an optimal level (minimizing the sum of internal and external costs). In that case, the marginal external cost (incremental cost of damaging the last unit) will equal the marginal internal cost (incremental cost of preventing the damage of the previous unit). On this basis, marginal external costs are sometimes assumed equal to marginal internal costs and estimated accordingly. This technique is called the cost of damage control approach. Concern for accounting for external costs is also expressed increasingly in practice about using shadow prices (monetary units per ton of greenhouse gas emissions) when making corporate budgeting decisions. This shows that companies have not recorded this type of expense yet, but it will be taken into account in the short term. In addition, it is more realistic and reasonable for companies to treat external costs as imminent internal costs. In other words, it

can be assumed that each type of external cost will eventually be reflected in the interior cost. Because external costs are internalized, internal costs increase from 0 when the costs are entirely external to the extent that the original external cost can be reached or exceeded. However, instead of accounting for external costs immediately, businesses can account for them over time in the future as internal costs. These temporal projections are significant in capital planning and other relevant decisions (Dascalu, C., Caraiani, C., Lungu, C. I., Colceag, F., & Guse, G. R., 2010).

3.2. Total cost assessment, full cost assessment

Environmental accounting describes the measurement and reporting of the allocation of environmental resources, costs, and risks within industrial groups to businesses, divisions, projects, activities, and different processes. Concerning the expanded basis of environmental accounting, three techniques were performed: total cost assessment, full cost assessment, and life-cycle analysis in the context of the ABC system, which are considered economic analysis techniques for the overall indirect costs of the business.

Total cost assessment (TCA) refers to the long-term, comprehensive financial analysis of an investment's full range of private costs and savings. The template for TCA represents an extension of the traditional analytical approach. It is a tool to analyze projects in the enterprise for cost savings and internal costs. TCA builds a model based on conventional costs by including direct and indirect contingent costs. Contingent costs include compliance costs, penalties, fines, relationship costs, release response costs, remediation costs, and the time value of money, a critical concern in traditional accounting models.

The full cost concept (FCC) is considered to identify, assess, and allocate conventional and environmental costs in an enterprise. FCC is an extension of socio-environmental accounting to measure global performance in Full Cost Accounting (FCA). It is recognized by all professional organisms, academicians, and practitioners and includes all conventional costs plus the external social costs addressed by the society (adjustment costs).

This approach provides an opportunity to calculate external costs that develop based on the cost pyramid recognized in environmental management accounting. In this cost pyramid, the direct and indirect financial and contingent costs are called conventional costs. This is extended to total cost by adding a broad range of direct, indirect, contingent, and less quantifiable costs. Finally, external social costs generated by the society expand the concept of cost to total environmental cost.

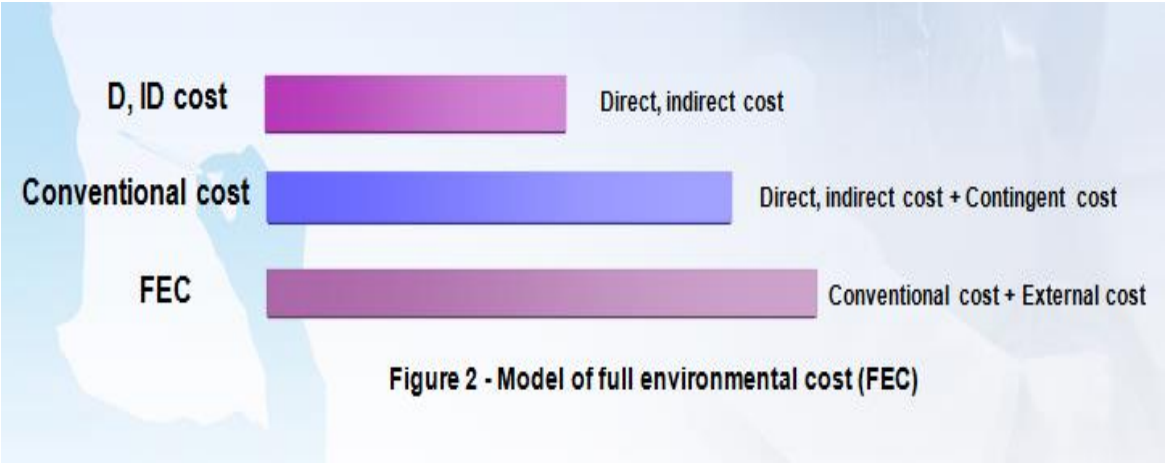

Figure 2 - Model of full environmental cost (FEC)

3.3. FCA model and SCA model

Sustainable Cost Accounting (SCA) is an FCA approach from a sustainability perspective. Businesses will provide comprehensive, complete information on sustainability based on the assumption that integrating eco-costs and externalities into full costs—corporate sustainability for optimal decision making and achieving sustainability goals.

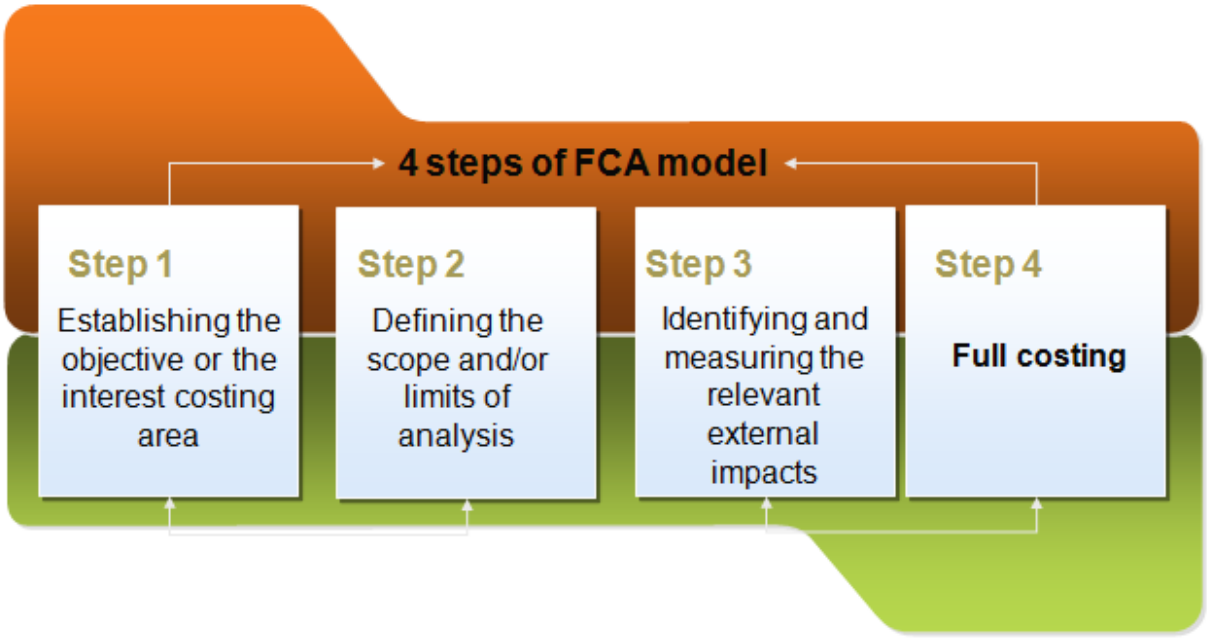

Figure 3 – Four steps of the FCA model (Source: Bebbington, J., Gray, R., Hibbitt, C., & Kirk, E., 2001)

Step 1: Establishing the objective or the interest costing area
A product, a production process, a part of the economic entity, the entity as a whole, an entire industry, etc. is identified as the overall full costing objective along with the associated conventional costs

Step 2: Defining the scope and limits of analysis
All negative and positive effects are identified, and the relevant effects in relation to the scope of the defined area of interest are outlined

Step 3: Identifying and measuring the relevant external impacts
The pertinent externalities concerning the restricted content or area of interest for full costing are monetized

Step 4: Full cost
Full costing, identifying private (conventional) and social (external) costs, as a support for market pricing
Sustainable Cost Accounting (SCA) - as accounting technology for the absorption of eco-costs and externalities. SCA aims to: (1) identify all external costs and benefits associated with activities, (2) recognize costs that reduce destructive impacts, and (3) integrate information confidence in the decision-making process.
This model assumes that by integrating eco-costs and externalities into full costs, society will be better informed to determine optimal decisions and achieve sustainability goals. The goal of the design phase is to form a common cost framework, identify potential areas of implementation, or proactively address existing problems. At this stage, it is essentially a theoretical approach, focusing on previous research findings that may or may not have been successful (Raluca Guse, G., Dascalu, C., Caraiani, C., Iuliana Lungu, C., & Colceag, F., 2011).).

The SCA model follows the standard steps of the FCA. However, in the first step, it is necessary to clearly define the type of unit that will be designed with the costing model. Then define the limits of the costing model to see what kind of information will be measured and fed into the model based on matching criteria. Appropriate information will be quantified in physical units such as the number of employees, working hours, amount of waste, natural resources used, mining areas to be restored, production departments to be equipment for filtering, cleaning, and the number of products produced, etc. Sometimes, it is necessary to convert to monetary value and use different methods to measure externalities and eco-costs.

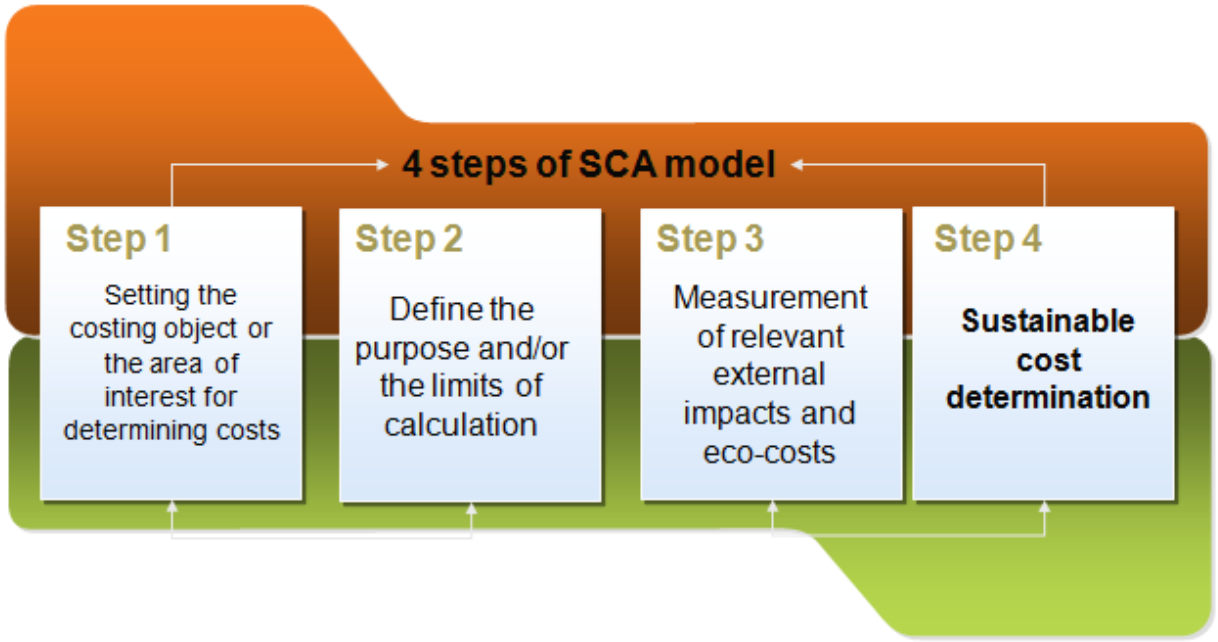

Figure 4 – Four steps of the SCA model (Source: Dascalu, C., Caraiani, C., Lungu, C. I., Colceag, F., & Guse, G. R., 2010).

Step 1: Setting the costing object or the area of interest for determining costs
Identify a product, production process, a sub-entity, the entity as a whole, an entire industry, etc., as a general objective of determining the sustainable cost and attaching the conventional costs

Step 2: Define the purpose and the limits of the calculation
Identify all possible negative and positive effects and choose only those relevant to the subject or area of interest set above; identify measures to avoid damage and environmental restoration, which generates eco-costs and is related to the costing object.

Step 3: Measurement of relevant external impacts and eco-costs
Quantify in monetary units the eco-costs and pertinent externalities to the object or area of concern for sustainable costing

Step 4: Sustainable cost determination
Building sustainable cost, with the absorption of eco-costs and externalities as the support for market pricing, accurate disclosure to provide stakeholders with information and competitive advantage in the context of sustainability

4. Factors affecting the application of FCA in enterprises to determine the level of sustainability

4.1. Research sample

According to Hair, J. F., Gabriel, M., & Patel, V. (2014), for one estimator, the minimum sample size needed for this study is n with n > 50 + 8 × number of variables = 50 + 8 × 18 = 194, we decided to choose 195 for the sample size.

The sample in the official study was made by the non-probability sampling method, collecting data from 195 enterprises out of a total of more than 1800 manufacturing enterprises (According to data from the Vietnam Securities Commission). Our quantitative research consists of determining and measuring the influence of factors on the application of FCA. We surveyed 195 enterprises (18 pharmaceutical enterprises, medical chemicals, 42 mineral enterprises, 32 plastic packaging enterprises, 15 fertilizer enterprises, 26 steel production enterprises, and 62 seafood processing enterprises). One hundred ninety-five questionnaires were distributed to 195 enterprises. The people who were distributed questionnaires were business leaders, chief accountants, and in charge of accounting. The survey period is from December 2021 to April 2022.

4.2. Research model and hypothesis

We distributed a questionnaire to examine the factors affecting the adoption of FCA in enterprises. We then conclude that: FCA depends on the company's strategy, the level of clean and sustainable production, and the views of the company's leaders and shareholders.

The article uses a logistic regression model to measure the impact of macro factors on the application of FCA in manufacturing enterprises in Vietnam. The dependent variable in the binary system is encoded into two values , 0 and 1, to estimate the applicability of the FCA. We pre-determined 41/195 businesses that have partially applied FCA (no. 1). The rest are businesses that don't apply for FCA (no. 0). Therefore, the paper will use logistic regression, a popular positive accounting theory method, according to Shah, N., Mohamed, F. E., Jover-Cobos, M., Macnaughtan, J., Davies, N., Moreau, R., ... & Jalan, R. (2013). Based on inheritance, the paper builds the expected research model as follows:

LOGIT [FCA = 1] = α0 + α1 * ME+ α2 * CH + α3 * ST + α4 * CHA + α5 * AC

A dependent variable: is a dummy variable that takes the value of 1 if the enterprise applies FCA and gets the value of 0 if the enterprise does not use FCA.

Independent variables: ME, CH, ST, CHA, AC

Parameters: α0, α1, α2,… .., αn; Error:

The independent variables and the dependent variables

	The measurement of external factors and eco-cost (ME)
1	Fully identify external factors (ME1)
2	Selection of the appropriate measurement standard for each external factor (ME2)
3	Implementation of measuring external factors into monetary indicators (ME3)
	Characteristics of Supply Chain (CH)
4	Pressure from suppliers requires businesses to apply FCA (CH1)
5	Pressure from customers requires businesses to apply FCA (CH2)
6	Pressure from competitors requires businesses to apply FCA (CH3)
7	Pressure from employees requires enterprises to apply FCA (CH4)
	The strategy of the business (ST)
8	Strategies for effective use of resources require businesses to apply sustainable accounting (ST1)
9	A sustainable development strategy requires businesses to apply sustainability accounting (ST2)
10	Clean production strategies require businesses to apply sustainable accounting (ST3)
11	Ensuring the interests of stakeholders requires businesses to apply sustainable accounting (ST4)
	Characteristics of the business (CHA)

12	Manufacturing technology creates suitable cost objects for FCA (CHA1)
13	Management's capacity to ensure the adoption of sustainable accounting (CHA2)
14	Information system to ensure the application of sustainable accounting (CHA3)
15	Input and output measurement tools and methods to enable accounting for sustainability measurement (CHA4)
	Corporate Accounting System (AC)
16	Qualifications of corporate accountants capable of applying sustainable accounting (AC1)
17	Accounting information system to ensure the application of sustainable accounting (AC2)
18	Applying modern technology to ensure the application of sustainable accounting (AC3)
	Applying full cost accounting (FCA)

Research hypotheses

Hypothesis H1: Measurement of external factors and eco-cost influences the application of FCA in manufacturing enterprises

Hypothesis H2: Factors in the supply chain of enterprises affect the application of FCA in manufacturing enterprises

Hypothesis H3: Firm strategy affects the application of FCA in manufacturing firms

Hypothesis H4: Firm characteristics affect the application of FCA in manufacturing enterprises

Hypothesis H5: Factors in the accounting system of enterprises affect the application of FCA in manufacturing enterprises

4.3. Research results

Test correlation between variables

Table 1 – Correlation between variables

		ME	ST	CHA	AC	CH	FCA
ME	Pearson Correlation	1	-.014	.024	-.228**	.030	-.015
	Sig. (2-tailed)		.842	.738	.001	.677	.835
	N	195	195	195	195	195	195
ST	Pearson Correlation	-.014	1	.446**	.047	.042	.192**
	Sig. (2-tailed)	.842		.000	.517	.564	.007
	N	195	195	195	195	195	195
CHA	Pearson Correlation	.024	.446**	1	-.050	.014	.361**
	Sig. (2-tailed)	.738	.000		.489	.841	.000
	N	195	195	195	195	195	195
AC	Pearson Correlation	-.228**	.047	-.050	1	-.032	.100
	Sig. (2-tailed)	.001	.517	.489		.652	.025
	N	195	195	195	195	195	195
CH	Pearson Correlation	.030	.042	.014	-.032	1	.101
	Sig. (2-tailed)	.677	.564	.841	.652		.160
	N	195	195	195	195	195	195
FCA	Pearson Correlation	-.015	.192**	.361**	.100	.101	1
	Sig. (2-tailed)	.835	.007	.000	.025	.160	
	N	195	195	195	195	195	195

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1 shows that: Variables ST, CHA, and AC with values of Sig <0.05 has a linear correlation with the FCA variable. The independent variables have Sig < 0.05 but have a Pearson Correlation > 0.4 (According to Trọng, H., & Ngọc, C. N. M., 2005), there is multicollinearity. However, variables ST, CHA, and AC all have Pearson Correlation < 0.4. Hypotheses H3, H4, and H5 are accepted.

The variables ME and CH have Sig values > 0.05, so there is no linear correlation with FCA. Hypotheses H1 and H2 were rejected.

Multivariate analysis

The multivariate analysis aims to examine the influence of the independent variables on applying FCA using logistic regression functions. This model is a popular approach to analyzing and measuring the correlation between independent and dependent variables by estimating probabilities for binary data analysis (Giang, Nguyen Phu., 2022).

If the Wald test has Sig < 0.05, it shows that the variable is statistically significant at the 5% significance level. Next, test the model's fit through the accuracy of the prediction and the model's fit (Omnibus Test). Forecast Accuracy is based on Population Percentage, which represents the percentage of correct predictions of the entire model; the higher this metric, the better the model fits. The degree of fit of the model (Omnibus Tests of Model Coefficients) with the Sig index. <0.05 shows that the independent variable has a linear relationship with the dependent variable in the population or that the selected model is suitable. Overall relevance was assessed using the -2LL (-2 Log Likelihood) criterion. The smaller the -2LL value, the higher the relevancy. If the minimum value of -2LL is 0 (no error), then the model has a perfect fit.

Multivariate analysis with groups of factors

The study examined the impact of factors on FCA adoption using logistic regression for the model. The dependent variable is a dummy variable that will receive the value one if the enterprise applies FCA until December 31, 2020, or receive the value 0 if the enterprise does not apply the FCA. Multivariate analysis of all 195 enterprises in Vietnam. The results of performing logistic regression with the dependent variable FCA are as follows:

Table 2- ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.145	3	4.382	10.256	.000[b]
	Residual	81.604	191	.427		
	Total	94.749	194			

a. Dependent Variable: FCA

b. Predictors: (Constant), AC, ST, CHA

Table 3 - Logistics regression

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Tolerance	
(Constant)	.426	1.239		.344	.031		
ST	.652	.250	.046	.607	.044	.797	1.255
CHA	.893	.200	.336	4.472	.000	.796	1.256
AC	.198	.157	.085	1.262	.009	.992	1.008

a. Dependent Variable: FCA

The Logistic regression function of the model is estimated in the form:

Ln (p/(1-p)) = 0,426 + 0,893 * CHA + 0,652 * ST + 0,198 * AC

5. Conclusion:

Our research is the approach of applying FCA in enterprises. Researching the use of FCA will help businesses use resources effectively, putting sustainable development into the business's strategy. We have added a new research method by linking FCA to cost data analysis from previous studies on integrating sustainability goals into corporate strategy and management controls. Traditional. We have highlighted the view of using FCA from a corporate strategy approach. We believe that this approach will enable corporate managers to adopt the inclusion of FCA in their development strategy, considering FCA as the core management control tool to support strategy implementation. We believe that this research approach can be applied to other sustainability control methods by integrating into traditional costs to identify external costs, representing cost burdens and benefits of the business, helping businesses see the influence of external factors as well as how their activities affect the environment and society, thereby having their sustainable development strategy.

With survey and survey data from 195 manufacturing enterprises in Vietnam, we conclude: For test results and regression analysis: ST, CHA, and AC have the value Sig. <0.05 indicates that these variables have a linear correlation with the FCA variable. The variables ME and CH have Sig values > 0.05, so there is no correlation with FCA. The results of multivariate regression analysis show that: Business characteristics of enterprises have the most influence on the application of FCA. The business has appropriate technological processes to identify and measure material flows; good managers have policies and orientations on clean production and environmental protection; a clear and separate information system for each stage and part of the enterprise; In particular, enterprises with good ability to measure input and output of raw materials will be very suitable to apply FCA. Next, the strategic variable of the enterprise (ST) has a significant influence on the application of FCA, specifically: enterprises have a clear strategy for efficient use of resources, sustainable development strategy, clean production export, ensuring the interests of stakeholders will tend to apply FCA more than other businesses. The third factor is the corporate accounting system (AC): Any enterprise has a good accounting team, a complete and transparent accounting information system, application of current accounting technology, and applicability. Then the FCA will be higher.

Reference

1. Antheaume, N. (2004). Valuing external costs–from theory to practice: implications for full cost environmental accounting. European Accounting Review, 13(3), 443-464.
2. Bebbington, J., Gray, R., Hibbitt, C., & Kirk, E. (2001). Full cost accounting: An agenda for action (No. 73, p. 172). London: Certified Accountants Educational Trust.
3. Brner, J., & Wunder, S. (2008). Paying for avoided deforestation in the Brazilian Amazon: from cost assessment to scheme design. International Forestry Review, 10(3), 496-511.
4. Dascalu, C., Caraiani, C., Lungu, C. I., Colceag, F., & Guse, G. R. (2010). The externalities in social environmental accounting. International Journal of Accounting & Information Management.
5. Fenwick, E., Claxton, K., & Sculpher, M. (2001). Representing uncertainty: the role of cost-effectiveness acceptability curves. Health economics, 10(8), 779-787.
6. Gale, R. J., & Stokoe, P. K. (2001). Environmental cost accounting and business strategy. In Handbook of environmentally conscious manufacturing (pp. 119-136). Springer, Boston, MA.
7. Giang, Nguyen Phu. (2022). Approaching Material Flow Cost Accounting (MFCA) According To The Management Control System, Factors Affecting The Application

Of MFCA In Businesses." Journal of Positive School Psychology (2022): 11544-11562.
8. Grzebieluckas, C., Campos, L. M. D. S., & Selig, P. M. (2012). Environmental accounting and environmental costs: an analysis of the scientific production from 1996 to 2007. Production, 22, 322-332.
9. Hair, J. F., Gabriel, M., & Patel, V. (2014). AMOS covariance-based structural equation modeling (CB-SEM): Guidelines on its application as a marketing research tool. Brazilian Journal of Marketing, 13(2).
10. Joshi, S., Krishnan, R., & Lave, L. (2001). Estimating the hidden costs of environmental regulation. The Accounting Review, 76(2), 171-198.
11. Markandya, A., & Tamborra, M. L. (2006). Green Accounting in Europe: The GARPII Project.
12. Milne, B. T. (1992). Spatial aggregation and neutral models in fractal landscapes. The American Naturalist, 139(1), 32-57.
13. Parry, R. (1998). Agricultural phosphorus and water quality: A US Environmental Protection Agency perspective. Journal of Environmental Quality, 27(2), 258-261.
14. Posner, E. A. (2001). Controlling agencies with cost-benefit analysis: A positive political theory perspective. U. Chi. L. Rev., 68, 1137.
15. Rubenstein, D. B. (1992). Bridging the gap between green accounting and black ink. Accounting, Organizations and Society, 17(5), 501-508.
16. Quah, E., & Boon, T. L. (2003). The economic cost of particulate air pollution on health in Singapore. Journal of Asian Economics, 14(1), 73-90.
17. Raluca Guse, G., Dascalu, C., Caraiani, C., Iuliana Lungu, C., & Colceag, F. (2011). Exploring eco-costs and externalities absorption policies and procedures in the context of global warming. Romanian Economic Journal, 14(40).
18. Shah, N., Mohamed, F. E., Jover-Cobos, M., Macnaughtan, J., Davies, N., Moreau, R., ... & Jalan, R. (2013). Increased renal expression and urinary excretion of TLR 4 in acute kidney injury associated with cirrhosis. Liver International, 33(3), 398-409.
19. Steen, B. (2005). Environmental costs and benefits in life cycle costing. Management of Environmental Quality: An International Journal.
20. Trọng, H., & Ngọc, C. N. M. (2005). Phân tích dữ liệu với SPSS. Nhà Xuất Bản Thống Kê Hà Nội.
21. Van den Ende, C. H. M., Breedveld, F. C., Le Cessie, S., Dijkmans, B. A. C., De Mug, A. W., & Hazes, J. M. W. (2000). Effect of intensive exercise on patients with active rheumatoid arthritis: a randomised clinical trial. Annals of the rheumatic diseases, 59(8), 615-621.
22. Zutshi, A., & Sohal, A. S. (2004). Adoption and maintenance of environmental management systems: critical success factors. Management of Environmental Quality: An International Journal.