Determinants of Environmental Management Accounting Practices: A Comparative Study between Listed Companies and Small and Medium Enterprises in Sri Lanka

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Abstract

The purpose of this research is to identify the determinants of Environmental Management Accounting (EMA) practices of the Public Listed Companies (PLCs) and Small and Medium Enterprises (SMEs) in Sri Lanka. Using a self-administered questionnaire survey, primary data were collected from 33 PLCs and 40 SMEs in Sri Lanka. Findings imply that environmental laws, shareholder perception, consumer perception, competitor perception, staff motivation, and pressure from environmental groups are the significant determinants of EMA adoption in PLCs and SMEs. However, EMA implementation by PLCs and SMEs is hindered by unions and financial institutions. In SMEs, resource constraints and resistance to change are the main impediments, whereas financial and resource constraints are the main obstacles to adopting EMA practices in PLCs. SMEs believe that EMA practices reduce environmental damage, increase ecological sustainability, and improve the firm's reputation. Moreover, most PLCs believe that implementing EMA practices reduces pollution, lowers costs, improves environmental stewardship, and improves the firm's reputation. This study updates and extends on prior survey-based research on EMA comparing PLCs and SMEs. The study can help SME owners and PLC management comprehend the benefits of EMA while green-friendly stock investments will be encouraged.

Keywords: Environmental management. Accounting practices, Environmental laws, Shareholder perception, Customer perception, Competitor, Staff motivation.

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Introduction

The roots of EMA date back to the 1970s as an effect of enhancing know-how on social and environmental incentives. Since then, Sri Lankan businesses have adopted practices like energy accounting, accounting for materials, carbon accounting, environmental capital budgeting, activity-based costing, environmental impact assessment, life cycle analysis, and biodiversity accounting (Dissanayake et al., 2018).

Historically, organisations accounted for financial expenditures, notwithstanding the existence of hidden environmental costs. However, recently, the world has become more environment-conscious due to worsening environmental risks. Public and stakeholder pressure grew on companies suspected of playing a significant role in the gradual destruction of the environment (Qian et al., 2018). This has led to some sort of environmental disclosures in the annual reports of companies, who have responded to that demand by revealing how their operations damage nature and how those operations are being remedied (Istrate et al., 2017). Therefore, just like financial accounting, environmental accounting is also given a prominent space within company annual reports, sustainability reports, and other media of reporting (Dissanayake et al., 2018).

The generation, analysis, and use of environmental-related financial information to help business decision-making are known as environmental management accounting (Bartolomeo et al., 2000). Adopting EMA practices has strengthened the existing government policies since companies practically benefit from those imposed regulations (Dissanayake et al., 2018). Accordingly, to make decisions that affect an organisation's environmental and financial performance, managers may use the physical flow of information and cost information generated by EMA procedures (Burritt et al., 2019).

With the evolving trend of being socially responsible, business organisations that follow environment-friendly strategies will acquire many benefits such as attaining competitive advantages over others, employing effective materials, decreasing environmental pollution, accurately pricing products, and improving firms' image among stakeholders. In addition, addressing and reporting environmental issues that affect the interests of its stakeholders might help an organisation gain legitimacy. Moreover, customers are the most potent stakeholder since they are concerned about environmental permits, tight environmental controls, and safe production procedures in an organisation's activities (Khalid et al., 2012). Accordingly, improving environmental performance can improve relationships with stakeholders such as customers, investors, banks, and the community (Le et al., 2019).

Sri Lankan economy is strongly dependent on environmental factors, with a 7% agricultural contribution of GDP. In addition, SMEs account for 80% of all businesses in Sri Lanka and employ approximately 35% of the workforce (The National Human Resources and Employment Policy for Sri Lanka, 2012). However, it is hard to find studies that focus on SMEs. Furthermore, there is a dearth of literature on comparative studies on EMA practices between PLCs and SMEs in Sri Lanka. Therefore, this research may bridge these gaps by studying the degree of adoption of EMA practices by the SMEs and comparing it with PLCs in Sri Lanka.

The main objective of this study is to discover the determinants of EMA practices of PLCs and SMEs while comparing PLCs and SMEs. This study will further outline the benefits and barriers of implementing EMA practices. The study's findings will be helpful to predominantly SME owners, to enhance EMA implementation and conquer the identified barriers. Furthermore, managers from listed entities may be encouraged to implement EMA practices while pulling off barriers, and potential investors may be literate on green-friendly investments. Additionally, our study will be a knowledge hub for future researchers to navigate the potential research areas.

The remainder of the study is organised as follows; section 2 reviews theoretical literature and empirical literature, section 3, describes the research methodology, section 4 presents and discusses the findings. Finally, section 5 presents the conclusion and discusses the implications of the study.

Literature Review

The increased interest in the EMA has resulted in different empirical findings in various contexts. Due to increased global demands and interest in environmental concerns over the last two decades, EMA has arisen as a new accounting technique to deliver environmental information to diverse parties. EMA is a powerful instrument for reducing environmental impacts, improving environmental performance, and achieving sustainability (Li, 2004). According to Doorasamy and Garbharran (2015), enhancing environmental awareness, decreasing environmental consequences, and enhancing environmental management can be achieved with EMA practices.

EMA adoption has been shown to have several economic and environmental advantages. Accounting professionals may track and treat environmental expenses and revenues through the use of EMA, establishing a relationship between environmental operations and the company's historical, current, and future financial stocks and flows (Burritt et al., 2002). According to Jasch (2006), the adoption of EMA results in more accurate environmental cost recording, which enables more informed environmental and economic decision-making within the manufacturing process.

However, the implementation of EMA is still in its infancy, especially in emerging countries. Despite the potential benefits of EMA, its acceptance and adoption persist extremely low in developing-country businesses (Susanto & Meiryani, 2019). Especially, small businesses that lack the necessary financial or human resources are left out of the loop during the implementation of the environmental management system (Campos, 2012). Therefore, governments and professional organisations in developing nations have yet to support or promote EMA.

The focus in EMA-related studies in many industries and small and medium businesses are constantly rising (Li, 2004). According to a previous review of the literature, a variety of reasons played a key role in the emergence and expansion of the EMA concept and practices in different contexts around the world. According to Welford and Gouldson (1993), environmental regulation is one of the most important elements influencing industry behaviour in the

environmental sector. Jamil et al. (2015) emphasise that compulsion plays a significant role in EMA practice. Similarly, Le et al. (2020) find that the nature and perspective of the firm; the pressure exerted by the government and stakeholders; and the methods, tools, and legislation all have a causal association with the implementation of EMA. Wachira and Wang'ombe (2019) stress that the level of EMA procedures used by manufacturing entities is positively related to the environmental regulation and financial performance.

Furthermore, Roger (2015) concludes that management in heavy manufacturing companies is generally open to change and implement EMA considering the perceived significant regulatory, economic, environmental, and international demands. According to the findings, Le et al. (2019) emphasise that EMA practices are positively influenced by government enforcement, stakeholder involvement, favourable environmental policies, expectations of the community, professional education, and financial conditions. Enforcement by the government has the greatest and most positive impact on the implementation of EMA. Conversely, it appears that EMA has a favourable effect on both financial and environmental efficiency.

However, according to Karimi et al. (2017), resistance to change, lack of standards and techniques for gathering and allocating environmental costs, competitive environment, culture and society influence the usage of EMA techniques. With a different view, Mehedy et al. (2018) discover a positive association between environmental accounting disclosure procedures and company characteristics, such as total assets, gross revenues, and Earning per Share (EPS), whereas a negative relationship is seen between environmental accounting disclosure methods and the age of the company.

In a study based on SMEs in South Africa, Nyahuna and Doorasamy (2021) find that SMEs choose EMA activities that have little or no cost connected and practices that can yield short-term benefits. Furthermore, they emphasise that physical EMA is more prevalent in SMEs than monetary EMA. Monetary EMA avoidance is based on the notion that expensive undertakings with no immediate financial rewards should be avoided. Similarly, Mohamed (2018) concludes that physical EMA is more frequent than monetary EMA in Malaysian SMEs. However, Campos (2012) reports a higher tendency of SMEs in Brazil to use monetary EMA than physical EMA.

In the Sri Lankan context, Dissanayake et al. (2018) discover that coercive factors such as environmental and government laws have highly influenced the adoption of EMA practices. Chathurangani and Madhusanka (2019) reveal that membership in the accounting body influences mental processes in adopting the EMA. They emphasise that normative pressures and coercive isomorphism affect the adoption of EMA among Sri Lankan manufacturing enterprises.

In a comparative study between Australia and Sri Lanka, Gunarathne and Lee (2019) find that companies in Sri Lanka show higher knowledge and expertise in EMA, mostly due to stronger formal training provided by the educational institutions. However, both countries' firms assert that additional effort is required to integrate and synchronise EMA with traditional accounting systems.

Numerous prior researches have demonstrated that environmental efficiency has a

considerable positive impact on the financial efficiency. Literature convinces that many academicians have studied EMA implementation by PLCs while SMEs were not mainly focused. Most literature reveals that coercive factors such as government enforcement, environmental laws, and pressure from stakeholders are most influential for adopting EMA practices. Furthermore, the nature and perspective of firms, professional education network, and financial conditions are considered among the rest of the influencing factors. In light of the aforementioned mixed findings, this study is conducted to deepen empirical discussions further.

Research Methodology

The sample was drawn using convenient sampling, considering 285 companies listed in the Colombo Stock Exchange (CSE) and considering more than 500,000 registered SMEs in Sri Lanka. Using survey strategy, we distributed 80 questionnaires (40 for PLCs and 40 for SMEs) through the snowball sampling technique, of which 73 responses were collected as 33 (82.5%) from PLCs and 40 (100%) from SMEs. Primary data were collected using a self-administered questionnaire emailed to the Management Accountants and Officers in charge of the sustainability of PLCs and the owners and the managers of SMEs. Referring to the previous literature (Dissanayake et al., 2018; Le et al., 2019; Gunarathne & Lee, 2019; Mokhtar et al., 2016), we selected environmental laws, shareholders' perception, consumers' perception, competitors' perception, pressure from environmental groups, staff motivation, the potency of labour unions, and the potency of financial institutions as variables to this study and the conceptual framework is developed as depicted in Figure 01.

Based on the literature and the conceptual framework, the following hypotheses were developed as presented in Table 1.

Table 1. Hypothesis Development

Hypotheses for SMEs	Hypotheses for PLCs
$H1_{A1}$: There is a significant impact of environmental laws on the adoption of EMA practices by SMEs.	$H1_{A2}$: There is a significant impact of environmental laws on the adoption of EMA practices by PLCs.
$H1_{B1}$: There is a significant impact of owners' perception on the EMA adoption by SMEs.	$H1_{B2}$: There is a significant impact of the shareholders' perception on the EMA adoption by PLCs.
$H1_{C1}$: There is a significant impact of customers' perception on the EMA adoption by SMEs.	$H1_{C2}$: There is a significant impact of the customers' perception on the EMA adoption by PLCs.
$H1_{D1}$: There is a significant impact of the competitors' perception on the EMA adoption by SMEs.	$H1_{D2}$: There is a significant impact of the competitors' perception on the EMA adoption by PLCs.
$H1_{E1}$: There is a significant impact of the pressure from environmental groups on the EMA adoption by SMEs.	$H1_{E2}$: There is a significant impact of the pressure from environmental groups on the EMA adoption by PLCs.

$H1_{F1}$: There is a significant impact of staff motivation on EMA adoption by SMEs.	$H1_{F2}$: There is a significant impact of staff motivation on EMA adoption by PLCs.
$H1_{G1}$: There is a significant impact of the potency of labour unions on the EMA adoption by SMEs.	$H1_{G2}$: There is a significant impact of the potency of labour unions on the EMA adoption by PLCs.
$H1_{J1}$: There is a significant impact of the potency of financial institutions on the EMA adoption by SMEs.	$H1_{J2}$: There is a significant impact of the potency of financial institutions on the EMA adoption by PLCs.

Source: Authors' presentation

The research models were developed as illustrated in Equations 01 and 02 in order to test the hypotheses.

$$EMA_{SME} = \beta_0 + \beta_1 EL + \beta_2 SP + \beta_3 CP + \beta_4 MP + \beta_5 EG + \beta_6 SM + \beta_7 LU + \beta_8 FI + \varepsilon \quad \ldots\ldots 01$$

$$EMA_{PLC} = \beta_0 + \beta_1 EL + \beta_2 SP + \beta_3 CP + \beta_4 MP + \beta_5 EG + \beta_6 SM + \beta_7 LU + \beta_8 FI + \varepsilon \quad \ldots\ldots 02$$

Where; EMA_{SME} indicates Adoption of EMA practices by SMEs, EMA_{PLC} indicates Adoption of EMA practices by PLCs, EL indicates Environmental Laws, SP indicates Shareholders'/Owners' Perception, CP indicates Consumers' Perception, MP indicates Competitors' Perception, EG indicates Pressure from Environmental Groups (EG), SM indicates Staff Motivation, LU indicates Potency of Labour Unions, FI indicates Potency of Financial Institutions, β_0 equals to intercept, β_1 - β_8 indicate coefficients, and ε is the standard error.

The survey consisted of two sections, of which the first section refers to the company profile of each of the respondents. The other section asked respondents to indicate the organisation's concern to adopt EMA practices using a 5 point Likert scale. The questionnaire was generated using a google form, and the link was sent to respective managers. To enhance the rate of responses, printed questionnaires were distributed whenever necessary. In order to analyse data, regression analysis was used, referring to the past studies by Chathurangani and Madhusanka (2019), Jamil et al. (2015), and Le et al. (2019).

Findings and Discussion

Data were analysed using descriptive analysis and regression analysis. Descriptive analysis indicated that the highest number of responses were recorded from executives (42%), while 19%, 7%, and 32% response rates were recorded from the assistant managers, the senior managers, and the owners of SMEs, respectively. SMEs have focused more on solid waste, hazardous waste, and material consumption as highly concerned EMA areas, whilst PLCs are concerned with energy, material accounting, and waste accounting.

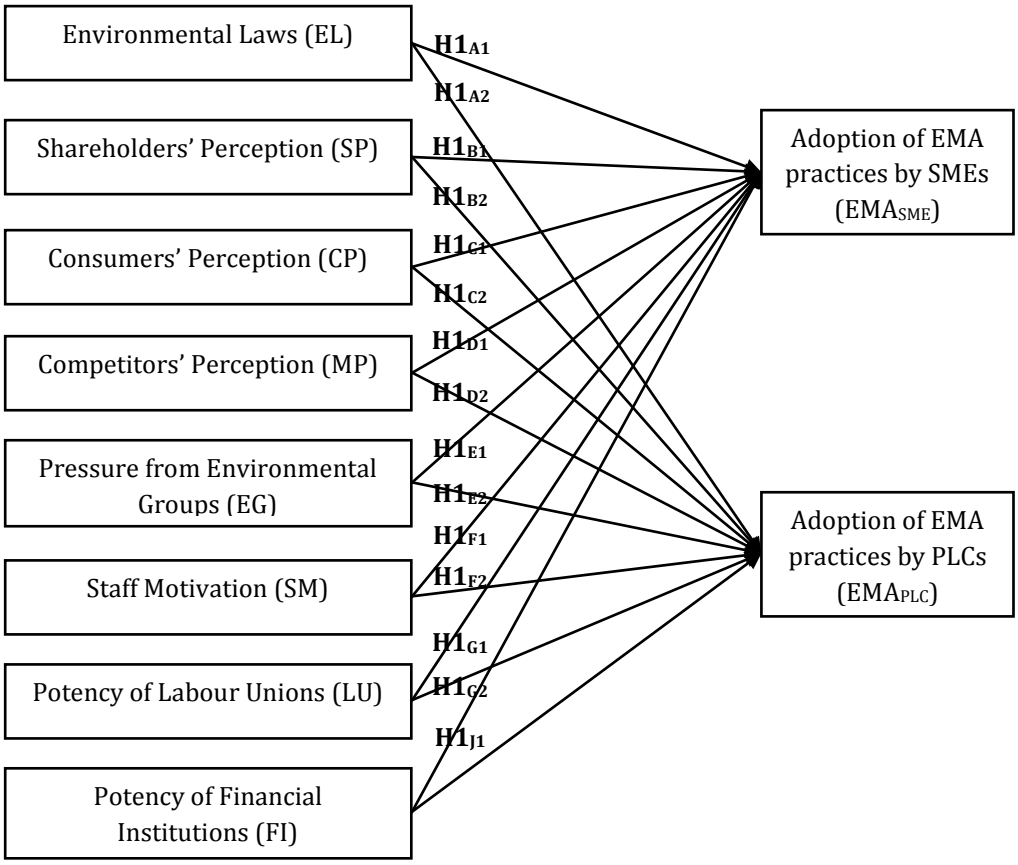

Figure 1. Conceptual Framework

To find out the motives behind the EMA adoption, the researcher has carried out a regression analysis, and it depicted the differences between the two sectors, SMEs and PLCs. According to Table 2, 62.5% of the variation of EMA practices of PLCs and 75.2% of the variation of EMA practices of SMEs are explained by the selected independent variables. Furthermore, Table 3 depicts the results of the regression analysis. Accordingly, $H1_{A1}$, $H1_{A2}$, $H1_{B1}$, $H1_{B2}$, $H1_{C1}$, $H1_{C2}$, $H1_{D1}$, $H1_{D2}$, $H1_{E1}$, and $H1_{E2}$ are accepted at 1% significance level, $H1_{F1}$ and $H1_{F2}$ are accepted at 5% significance level, $H1_{G1}$, $H1_{G2}$, $H1_{J1}$, and $H1_{J2}$ are accepted at 10% significance level indicating that environmental laws, perception of shareholders, perception of consumers, perception of competitors, staff motivation, and the pressure from the environmental groups have a significant positive impact on the EMA adoption in both sectors. In contrast, the potency of labour unions and the potency of financial institutions have a significant negative impact on EMA adoption in both sectors.

Table 2. R-square and Adjusted R-square - SME and PLC

Model	R square	Adjusted R Square	Std. error of the estimation	F stat	Sig.
EMA_{SME}	0.625	0.598	0.526	39.003	0.000
EMA_{PLC}	0.752	0.612	0.465	41.430	0.000

Source: Author constructed

Findings imply that when there are strict environmental laws, both SMEs and PLCs tend to implement EMA practices. This outcome is in line with the findings of Welford and Gouldson (1993), Jamil et al. (2015), Roger (2015), Dissanayake et al. (2018), Le et al. (2019), and Le et al. (2020). Furthermore, when shareholders/owners, consumers, competitors, and staff have positive attitudes and motivation towards EMA practices, both PLCs and SMEs are more inclined to embrace them. These findings agree with Le et al. (2019) and Le et al. (2020). Moreover, when environmental groups exert increased pressure on businesses to adopt EMA practices, SMEs and PLCs are more likely to comply. This is in line with Dissanayake et al. (2018). Conversely, when the labour unions and financial institutions hold greater influence, SMEs and PLCs are more likely to dissuade EMA practices.

Table 3. Regression Results

Variable	SME/PLC	Coefficient Beta	Std. Error	Sig.
(Constant)	SME	5.470	0.281	0.000
	PLC	4.330	0.101	0.000
EL	SME	0.451	0.067	0.000
	PLC	0.255	0.058	0.000
SP	SME	0.205	0.067	0.000
	PLC	0.105	0.068	0.000
CP	SME	0.125	0.552	0.000
	PLC	0.148	0.582	0.000
MP	SME	0.581	0.072	0.006
	PLC	0.554	0.050	0.001
EG	SME	0.258	0.098	0.005
	PLC	0.152	0.028	0.001
SM	SME	0.348	0.159	0.041
	PLC	0.354	0.154	0.032
LU	SME	-0.168	0.648	0.064
	PLC	-0.152	0.665	0.075
FI	SME	-0.345	0.167	0.080
	PLC	-0.351	0.154	0.085

Source: Author constructed

Table 4 shows the descriptives for ways of using EMA practices in SMEs and PLCs. Since we have assigned the score 1 for highly agree and 5 for highly disagree, the lowest mean represents widespread use of EMA practices. Accordingly, accounting for materials (1.28), waste accounting (1.36), and material flow analysis (1.50) are used more in SMEs, whereas water accounting (4.32), life cycle analysis (4.28) and sustainability balanced scorecard (4.17) are very rarely used. When it comes to PLCs, waste accounting (1.25), accounting for materials (1.52), energy & carbon accounting (1.82) are commonly used in PLCs, while Life cycle analysis (4.58) is not used frequently in PLCs. Findings are consistent with Gunarathne and Lee (2019).

Table 4. Use of EMA Practices

	SME			PLC		
EMA practices	Mean (Test Value= 3)	Sig.	Mean Difference	Mean (Test Value= 3)	Sig.	Mean Difference
Life cycle Analysis	4.28	0.000	0.312	4.58	0.002	0.237
Energy & Carbon Accounting	2.82	0.005	0.654	1.82	0.001	-0.954
Material Flow Analysis	1.50	0.001	-0.466	2.50	0.006	0.325
Sustainability balanced scorecard	4.17	0.000	0.301	2.98	0.000	0.670
Waste Accounting	1.36	0.006	-0.895	1.25	0.000	-0.380
Accounting for materials	1.28	0.030	-0.887	1.52	0.000	-0.669
Water Accounting	4.32	0.000	0.316	2.01	0.030	0.597

Source: Author constructed

Table 5 reflects the descriptive statistics for the benefits of EMA practices of SMEs. Because our scale has 1 for strongly agreeing and 5 for strongly disagreeing, the lowest mean shows the most important benefits. EMA practices have been identified by the majority of PLCs and SMEs as having significant benefits. However, as the most significant benefits, SMEs are of the opinion that EMA practices result in mitigating environmental impact (1.52), improvement of reputation (1.82), and environmental improvements (1.94). At the same time, PLCs have a perception that the use of EMA practices leads to minimising total costs (1.54), mitigating the environmental impact (1.56), environmental improvements (1.82), and enhancing the company image (1.89). Results are in line with Disssanyake et al. (2018).

Table 5. Benefits that the Organisations are Gaining from EMA Practices

	SME			PLC		
EMA practices	Mean (Test Value= 3)	Sig.	Mean Difference	Mean (Test Value= 3)	Sig.	Mean Difference
Minimize total costs	2.54	0.000	-1.654	1.54	0.000	-1.28
Mitigate environmental impact	1.52	0.000	-1.591	1.56	0.000	-1.597
Environmental Improvements	1.94	0.000	-1.587	1.82	0.000	-1.502
The attraction of human resources	2.18	0.000	-0.948	2.28	0.000	-0.498
Improvement of reputation	1.82	0.005	-1.175	1.89	0.000	-1.198
Increased customer relationship	2.08	0.000	-1.591	2.98	0.000	-1.678
Increased demand on green products	2.13	0.000	-0.588	2.58	0.000	-0.678
Reduce legal costs	2.19	0.000	-0.769	2.94	0.000	-0.198

Source: Author constructed

Table 6 depicts the descriptive statistics for barriers that the organisations have to face when applying EMA practices. Because our scale has 1 for strongly agreeing and 5 for strongly disagreeing, the lowest mean shows the most hindering barrier for EMA practices. Accordingly, the major limitation to EMA practices in SMEs in Sri Lanka is resource constraints (1.45) and resistance to change (1.65). The major limitations to EMA practices in PLCs are resource constraints (1.35) and financial barriers (1.59). This outcome agrees with the findings of Disssanyake et al. (2018).

Table 6. Barriers that the Organisations Face when Applying EMA Practices

	SME			PLC		
EMA practices	Mean (Test Value= 3)	Sig.	Mean Difference	Mean (Test Value= 3)	Sig.	Mean Difference
Low priority on accounting for environmental costs	2.72	0.000	0.652	2.61	0.000	0.891
Resistance to change	1.65	0.000	-0.985	2.85	0.000	0.925
Financial Barriers	2.59	0.002	0.380	1.59	0.000	-0.378
Resource constraints	1.45	0.000	-0.678	1.35	0.000	-0.628
Lack of integrating environment in to strategic planning	2.16	0.002	0.256	2.80	0.005	0.287

Source: Author constructed

Conclusion and Contribution of the Study

The study is conducted to identify and compare the determinants of EMA practices adopted by SMEs and PLCs in the Sri Lankan context. Achieving the main objective, the study concludes that environmental laws, shareholder perception, consumer perception, competitor perception, staff motivation, pressure from environmental groups, labour union potency, and financial institution potency are significant determinants of EMA adoption in PLCs and SMEs. However, influence of labour unions and financial institutions harm EMA adoption in PLCs and SMEs.

Addressing the secondary objectives, the researcher has analysed the benefits and barriers of adopting EMA practices. SMEs perceive that implementing EMA practices leads to the reduction of environmental destruction, the enhancement of ecological sustainability, and the strengthening of the firm's reputation. At the same time, the majority of the PLCs believe that implementing EMA practices results in the reduction of overall expenses, the reduction of environmental pollution, the enhancement of environmental stewardship, and the enhancement of the firm's reputation. Furthermore, resource constraints and resistance to change were recognised as the primary hurdle to implementing EMA practices in SMEs, whilst financial and resource restrictions were identified as the major challenges in implementing EMA practices in PLCs.

In conclusion, PLCs are keen to adopt EMA practices while SMEs moderately employ EMA techniques due to the hesitation to practice them because of the barriers of doing so. As a result, environmental costs are considered insignificant due to lack of environmental responsibility and accountability. Lack of integration of the environment into strategic planning, reluctance to change, resource restrictions, physical environmental uncertainty, financial hurdles, and lack of knowledge are the issues that need to be addressed to promote EMA practices among SMEs.

July 2021 was revealed to be the warmest month in the past two decades. In such an era, green enterprises, sustainability concepts, and environmentally friendly projects are becoming increasingly important. As a result, environmental management accounting is critical for increasing sustainable performance's commercial and financial value. Therefore, this comparative study between PLC and SMEs would be great to raise awareness about the implementation of EMA practices and its determinants.

Implications

Implications of the study depend on the contributions made and the beneficiaries. Knowledge contribution is the key focus in terms of contributions. This study will add to our understanding of the extent to which EMA practices are employed in both PLCs and SMEs. Sri Lanka has a limited number of published articles on such comparative research. As a result, this study will fill a research gap by adding new evidence to the literature.

Furthermore, several parties will benefit from the research findings. Most notably, owners of SMEs may have an idea of overcoming obstacles and making additional advancements in EMA. Furthermore, by referring to the conclusions of this study, managers of publicly traded companies may get insight into how to overcome difficulties and improve EMA practices. Because literate investors are aware of the findings of related studies, green-friendly stock investments may stand to strengthen. In contrast, policymakers may gather data on EMA hurdles in order to develop concrete solutions to promote EMA practices. Moreover, future researchers will understand the implementation of EMA practices by PLCs and SMEs referring to this research. They will be able to identify the promising research areas quickly.

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Conflict of Interest

The authors declare no conflicts of interest.

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Appendix 01. Operationalisation

Variable	Acronym	Indicator	Measurement	Source/ Reference
Dependent Variables				
Adoption of EMA by SMEs	EMA_{SME}	– Life cycle Analysis – Energy & Carbon Accounting – Material Flow Analysis – Sustainability balanced scorecard – Waste Accounting – Accounting for materials – Water Accounting	Likert Scale	Welford and Gouldson (1993), Jamil et al. (2015), Roger (2015), Dissanayake et al. (2018)
Adoption of EMA by PLCs	EMA_{PLC}			
Independent Variables				
Environmental Laws	EL	– Environmental laws – Government regulations – Government pollutions standards	Likert Scale	Welford and Gouldson (1993), Jamil et al. (2015), Roger (2015), Dissanayake et al. (2018), Le et al. (2019), Le et al. (2020)
Owners'/Share holders' Perception	SP	– Willingness to adopt EMA practices – Awareness on EMA practices by owners/shareholders	Likert Scale	Gale (2006), Dissanayake et al. (2018), Le et al. (2019), Le et al. (2020)
Consumers' Perception	CP	– Willingness to deal with a company who adopt EMA practices – Customer expectation for EMA practices – Awareness on EMA practices by customers	Likert Scale	Gale (2006), Dissanayake et al. (2018), Le et al. (2019), Le et al. (2020)
Competitors' Perception	MP	– Willingness to adopt EMA practices by competitors – Extent of adoption of EMA practices by competitors	Likert Scale	Gale (2006), Dissanayake et al. (2018), Le et al. (2019), Le et al. (2020)

Pressure from Environmental Groups	EG	− Awareness on EMA practices by Environmental Groups − Expectation of Environmental Groups for EMA practices − Influence from Environmental Groups	Likert Scale	Gale (2006), Dissanayake et al. (2018)
Staff Motivation	SM	− Willingness to adopt EMA practices − Awareness on EMA practices by staff	Likert Scale	Dissanayake et al. (2018)
Potency of Labour Unions	LU	− Willingness to adopt EMA practices by Labour Unions − Expectation of Labour Unions	Likert Scale	Gale (2006), Dissanayake et al. (2018)
Potency of Financial Institutions	FI	− Awareness on EMA practices by Financial Institutions − Expectation of Financial Institutions for EMA practices − Influence from Financial Institutions	Likert Scale	Dissanayake et al. (2018)