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Institutional Pressures and Environmental Management Accounting System Adoption: Evidence from Malaysian Public Listed Companies

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ABSTRACT

Sustainability has emerged as a vital concern in addressing major environmental problems. Many countries suffer from severe environmental issues, mainly affected by industrial business activities that accumulate over time and adversely impact environmental performance. Moreover, environmental problems are worsening as rapidly as their economic growth. Environmental Management Accounting System (EMAS) can enhance financial and business performances by evaluating financial and physical environment-related information. Despite the prominence of the EMAS, the level of EMAS adoption is still weak, especially in developing countries. This research examines the level of EMAS adoption among public listed companies in Malaysia and the institutional pressures influencing EMAS adoption. The institutional theory is the underlying theory, and data are collected via an online questionnaire. A total of 205 usable questionnaires were collected from the public listed companies in Malaysia. Ordinary Least Squares (OLS) regression analysis was conducted for hypothesis testing. Results indicated that EMAS had been moderately adopted among public listed companies in Malaysia. The findings revealed that the adoption level for Physical EMA (PEMA) and Monetary EMA (MEMA) is moderately adopted. The results indicate that most companies have a budget allocation for environmental activities. Specifically, this research found that coercive and mimetic pressures significantly influenced EMAS adoption among public listed companies in Malaysia. The result appears that normative pressure does not contribute significantly to the EMAS adoption among public listed companies in Malaysia. This research is significant to the companies, policymakers, and environmental regulatory bodies in understanding the level of EMAS adoption in Malaysia. The government and professional bodies should play a dynamic role in promoting EMAS adoption by issuing specific guidelines and environmental training. In addition, this research provides valuable contributions to the existing literature by providing useful insights into the institutional pressures influencing EMAS adoption among public listed companies in developing countries.

Keywords: Environmental Management Accounting System (EMAS); physical EMA (PEMA); monetary EMA (MEMA); institutional pressures; public listed companies

INTRODUCTION

Sustainability has become popular among the general public due to the growing number of obvious environmental threats to the human future. The Sustainable Development Goals (SDG) were recognized by all United Nations Member States in 2015 as a worldwide demand to act to reduce poverty, protect the earth and guarantee that all people live in harmony and fortune by 2030. One of the 11th Malaysian Plan (11MP) aims is to take imperative action to mitigate climate change and its effect on the environment (SDG13). The leading causes of severe pollution in Malaysia are business and industrial activities. It was reported that many industries, such as manufacturing, mining, and construction industry, contribute to contamination by air, water, or sound (Yahaya & Abidin 2020; Khan et al. 2017). These business activities are creating major environmental problems in the form of carbon emissions, pollution, waste generation, and the uncontrolled use of limited physical resources. In addition, environmental harms such as rapid depletion of resources, global warming, and decreased biological diversity cause the conservation balance to worsen. These sustainability issues have prompted the increased demand for environmental management practices. Commonly, the conventional management accounting system did not provide truthful information on environment-related cost management (Hossain 2019) and failed to make available environmental information in their financial accounting.

As a subgroup of the environmental management system, Environmental Management Accounting System (EMAS) can enhance financial and business performances by evaluating financial and physical environment-related information (Qian et al. 2018). The problems with the conventional management accounting systems raise the requirement of utilizing EMAS as a corrective innovation (Ferdous et al. 2019; Ariffin 2016). Through EMAS adoption, companies can measure financial and non-financial environmental information beyond the ordinary perspective, which tends to lump environmental costs into the overhead costs (Doorasamy & Nyahuna 2021). The greater adoption of EMAS has not only guaranteed practical usage of water and energy sources and better compliance with environmental rules but also upholds sustainability as the organisation's core strategic imperative. In a developing country such as Malaysia, prior research on EMAS has centred more on

environmentally sensitive industries such as the manufacturing industry, taking off the organization in other sectors, especially in environmentally less sensitive industries generally unexplored. From the viewpoint of natural resource consumption, environmentally less sensitive industries such as the service industry also affect the environment, which critically needs to be managed (Ahmad et al. 2020). Typically, this industry consumes significant amounts of resources such as energy, water, and non-durable items due to its business characteristics and services (Gunawardena & Dissanayake 2021). These companies that only focus more on profitability as an indicator of business performance have entirely ignored an organization's responsibility towards society and the environment.

There is a growing body of study on EMAS adoption, primarily based in developed countries. Despite the significance and benefits of EMAS, the findings of earlier EMAS research indicated that the adoption level of EMAS is still at the infancy stage, especially in developing nations such as Malaysia (Che Ku Kassim et al. 2021; Rasit et al. 2020; Mat Yusoh & Tuan Mat 2020). This poor adoption of EMAS represents the main problem of this research. This is due to a lack of awareness, lack of government enforcement of environmental regulations and might also be because of a lack of other stakeholders' pressures. Therefore, this situation leaves a significant gap in the study of management accounting techniques related to environmental practices among public listed companies, particularly in the Malaysian context. There are solid justifications for conducting the study in Malaysia. It is unclear how public listed companies adopt environmental practices. Furthermore, Zaradat et al. (2021) affirmed that environmental accounting development had not been studied empirically sufficiently in developing countries. Mohamed and Jamil (2018) stated that there is a need for solid empirical evidence on EMAS adoption in developing countries like Malaysia. The government of Malaysia has been steadily encouraging companies to exercise corporate social responsibility (CSR) activities, particularly in efforts to improve the overall quality of life and environmental protection (Atan et al. 2018). Thus, the objective of this research is to determine the adoption level of EMAS among the public listed companies in Malaysia. Secondly, this research examines the influences of institutional pressures on EMAS adoption among the public listed companies in Malaysia.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

ENVIRONMENTAL MANAGEMENT ACCOUNTING SYSTEM (EMAS)

An environmental management accounting system is a new innovative concept and an extension of the conventional management accounting system. Regardless of its lack of clear definition, EMAS can be defined as the identification, allocation, generation, and use of physical and monetary information to assist business decision-making that can drive sustainable business development (Phan et al. 2017; Mokhtar et al. 2016). The conventional management accounting system has many cognitive limitations related to environmental information and only emphases on the profitability perspective. As more companies become interested in using management accounting to manage their environmental performance, EMAS has gained recognition from countries worldwide (Chaturangani & Hemathilake 2019; Phan et al. 2017). EMAS adoption leads companies to create more efficient and effective strategies to obtain competitive economic advantages. Conventional management accounting systems disregard the generation of environmental information as this invisible cost is generally recognized as an indirect cost of the products or services (Doorasamy 2016). EMAS may give visibility to the environmental aspects of organizational activity that are otherwise often unclear in the conventional management accounting systems. Many organizations misinterpreted both costs and benefits in environmental management, leading to significant failures in identifying and preventing environmental issues. As a result, many opportunities for environmental improvement and cost reduction are lost in the organization (Le et al. 2019). Through the adoption of EMAS, environmental information lumped in the overhead accounts can be identified, measured, and reported.

Environmental reporting is an accounting field innovation related to the provision of environmental information to internal and external stakeholders. EMAS able to produce two types of environmental information, specifically, monetary environmental management accounting (MEMA) and physical environmental management accounting (PEMA) (Chaturangani & Hemathilake 2019; Mokhtar et al. 2016). MEMA relates to the environmentally induced impacts on an organization expressed in monetary terms (Jamil & Mohamed 2017). This information can also be represented as the monetization of physical environmental information. In contrast, PEMA relates to the flow of natural resources in the physical unit, such as the total amount of freshwater consumed and the total volume of wastes and energy (Jamil & Mohamed 2017). The ability to capture physical and monetary environmental-related information would surely benefit an organization. This information can help the top management to make better decisions to ensure improved economic and environmental performance. In addition, EMAS can satisfy the growing demands of various stakeholders for information regarding a company's environmental performance. Prior researchers stipulated that the adoption of EMAS can assist the organization in realizing extensive cost savings, enriching attractiveness, and improvement on business performance (Rahman et al. 2021; Pratiwi et al. 2020; Rasit et al. 2020). The adoption of EMAS is essential because addressing

environmental matters leads to improved financial performance (Doorasamy & Nyahuna 2021; Tran et al. 2020; Susanto & Meiryani 2019).

EMAS ADOPTION IN PUBLIC LISTED COMPANIES

In response to such degradation, a contemporary movement involving a new sustainable approach has arisen in developing countries, specifically Malaysia. It seems that companies in Malaysia have taken bold steps in environmental practices and sustainable activities. Rules and regulations regarding environmental protection have changed dramatically in Malaysia over the past decade to meet the objectives of sustainable development goals. In Malaysia, public listed companies serve as the economy's backbone and play a crucial role in every commercial concern ranging from telecommunications, transportation, construction, industrial products, energy, and financial services. Chaturangani and Hemathilake (2019) reported that having a proper environmental accounting practice is crucial for companies' better environmental performance. The Malaysian government is committed to maintaining, preserving, and enhancing its public listed companies through various green initiatives. However, most of the prior research on EMAS has centred more on environmentally sensitive industries such as the manufacturing industry (Rasit et al. 2019; Jamil & Mohamed 2017). Furthermore, a review of the management accounting literature has shown that the environmentally less sensitive industry has not focused on EMAS-related research. Consequently, there is a lack of comprehensive understanding of the institutional pressures influencing EMAS adoption within public listed companies (Ariffin 2020). Therefore, companies in other industries will also be part of this research population. In addition, there is a limited number of studies on EMAS adoption among the public listed companies in Malaysia. Nevertheless, it is believed that additional research in the public listed companies on EMAS adoption is required to provide different insights into the potential adoption of EMAS.

INSTITUTIONAL THEORY

Most of the research uses legitimacy theory and stakeholder theory to explain the adoption of EMAS, while there is limited use of institutional theory (Che Ku Kassim et al. 2021; Latif et al. 2020; Jamil & Mohamed 2017). This research utilizes the institutional theory to examine the institutional pressures influencing EMAS adoption among public listed companies to address these gaps. The most significant element in institutional theory is the concept of isomorphism. The institutional theory of isomorphism has been used to clarify influences that drive companies to engage in behavioural change, generally in structure and practice. In addition, the institutional theory explores how business structure and actions are formed by institutional forces such as the government, customers, professional bodies, and other companies that surround organizations (Wang et al. 2018).

Under New Institutional Sociology, the isomorphic concept enlightens the organisation's structure in its environment, gradually becoming homogenized. There are three institutional theory elements: coercive isomorphism, normative processes, and mimetic pressures (Che Ku Kassim et al. 2021; Latif et al. 2020). Without such institutional pressures, EMAS might not be adopted, mainly when benefits deriving from the adoption of EMAS are not readily visible. Companies are less likely to adopt EMAS when the employees are not exposed to the benefits of EMAS. In this context, it is necessary to explore the factors of adopting EMAS due to its significance. The use of institutional theory is supported by other EMA researchers such as Che Ku Kassim et al. (2021), Mat Yusoh and Tuan Mat (2020), and Jamil and Mohamed (2017). Thus, the institutional theory seems to be the most appropriate theory to investigate the influence of various institutional pressures on EMAS adoption among the public listed companies in Malaysia.

The research framework shows the relationship between the independent and dependent variables. This research utilizes the institutional theory proposed by Jamil and Mohamed (2017) as an underlying theory. This research framework depicts the institutional pressures that may influence EMAS adoption among public listed companies. The independent variables are institutional pressures comprised of coercive, normative, and mimetic pressure, while the dependent variable is EMAS adoption. Figure 1 shows the research framework for this research.

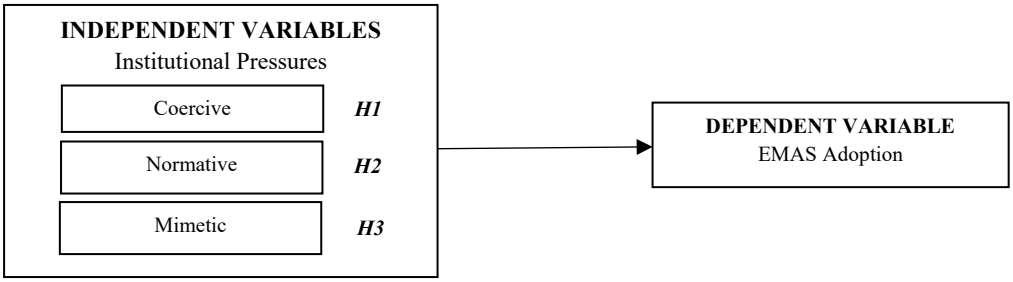

FIGURE 1. Research framework

INSTITUTIONAL PRESSURES AND EMAS ADOPTION

The institutional theory explains the behaviours and actions of an organization. This theory assumes that companies are commonly affected by the external environment, such as values, norms, cultures, and regulations. Companies are widely affected by changes in the external environment and can be detrimental if they ignore these changes. Thus, companies must acknowledge these changes and adopt EMAS to manage the environmental problem (Latif et al. 2020). There are three types of institutional pressure, which are coercive pressure, mimetic pressure, and normative pressure.

Coercive Pressure and EMAS Adoption Coercive pressure is the most prominent pillar when stakeholders impose intense pressure through rules, regulations, and punishments (Wang et al. 2018). The pressure exerted by external stakeholders such as government authorities, head office, customers, shareholders, and non-governmental organizations will affect management accounting practices, including EMAS adoption. According to the institutional theory, this pressure reflects the regulative that forces organizations to change their practice and function of companies. The government plays an influential role in shaping accounting practices (Jamil & Mohamed 2017). Coercive pressure will lead to the improvement of adopting EMAS as companies comply with environmental rules and regulations (Che Ku Kassim et al. 2021). Similarly, Chathurangani and Hemathilake (2019) revealed that coercive pressure is the most forceful factor for EMAS adoption among manufacturing companies in Sri Lanka. In Pakistan, Latif et al. (2020) reported that coercive pressures significantly and positively impact the adoption of EMAS. Companies are more likely to adhere to present regulations issued by the government and the regulatory bodies to avoid facing legitimacy disputes (Tran et al. 2020). Thus, this research proposes the hypothesis as follows:

H_1 Coercive pressure influences EMAS adoption among the public listed companies in Malaysia.

Normative Pressure and EMAS Adoption Normative pressure can be derived through professionalization, management competency, and strategic coordination (Bouliane et al. 2018). Trade unions and other social entities are ordinarily considered to create normative pressures (Latif et al. 2020). There are two sources of normative pressures: education and a professional networking (Chathurangani & Hemathilake 2019). A particular area of formal education, such as accounting, can be a foundation of normative isomorphism. EMAS adoption requires support from individuals directly involved in environmental management in organizations. Normative pressure exerted by professional bodies can enhance the adoption new practices such as EMAS. Similar education and training bring the same professional values, thus inducing similar practices by companies within the environment. This normative pressure can affect socially compliant behaviours and actions of companies. Jamil and Mohamed (2017) found that normative pressure positively and significantly affects EMAS adoption among small-medium manufacturing companies (SMEs) in Malaysia. A recent study by Latif et al. (2020) also revealed that normative pressures significantly and positively impact the adoption of EMAS among manufacturing companies in Pakistan. Thus, this research proposes the hypothesis as follows:

H_2 Normative pressure influences EMAS adoption among the public listed companies in Malaysia.

Mimetic Pressure and EMAS Adoption Mimetic pressure is derived from ambiguity which may arise from uncertain conditions when companies try to mimic other companies' practices (Ribeiro et al. 2016). The mimetic processes result from standard responses to the uncertainty that causes a change in the organisation's practices. Therefore, companies need to respond to their competitors' actions and behaviours. Recognizing the significance of environmental costs within companies plays a vital role in promoting EMAS. Mimetic pressure encourages better environmental management as the companies engaged in the competition look for superior performance

(Latan et al. 2018). Some companies are not enthusiastic about changing the present management accounting system, as environmental accounting has not become a norm within the organization field. However, companies under pressure to engage in the practice for legitimacy reasons are more likely to imitate companies already considered successful in EMAS adoption (Amoako et al. 2021; Razak et al. 2020). Likewise, Chathurangani and Hemathilake (2019) found that mimetic pressure has a statistically significant and moderate positive relationship with EMAS adoption among manufacturing companies in Sri Lanka. Thus, this research proposes the hypothesis as follows:

H_3 Mimetic pressure influences EMAS adoption among the public listed companies in Malaysia.

RESEARCH METHODOLOGY

This research adopts the quantitative approach that uses descriptive analysis and research hypotheses testing to examine the EMAS adoption among public listed companies in Malaysia. This research population is public listed companies on the Main Market of Bursa Malaysia. According to Bursa Malaysia, 776 companies were identified, which made out the total number for the entire population for this research. The public listed companies were selected due to the nature of the business that significantly impacts the environment (Razak et al. 2020; Qian et al. 2018). Table 1 below summarises the population of this research based on the environmental sensitivity industry.

TABLE 1. Sector Representation of the Population

Sector	No. of companies	Percentage (%)
Environmentally sensitive:		
Construction	52	6.73
Energy	31	3.30
Industrial products and services	221	28.63
Plantation	42	5.67
Property	97	12.66
Transportation and logistics	32	3.96
Total of environmentally sensitive	475	60.95
Environmentally less sensitive:		
Consumer products and services	168	21.90
Financial services	31	4.09
Health care	14	1.72
Real estate investment trusts (REITs)	17	2.24
Technology	43	5.41
Telecommunications and media	16	2.11
Utilities	12	1.58
Total of environmentally less sensitive	301	39.05
Total of population	776	100.00

The companies' contact information was obtained from the Main Market of Bursa Malaysia website. Cluster and simple random sampling methods were used to ensure that the target samples were included in the research. The unit analysis is an organization, and the target respondents for this research comprise the chief financial officer (CFO), finance director, finance manager, or project manager. They are assumed to have pertinent knowledge of the organization's environmental and sustainability accounting information. A structured questionnaire was adopted by Jamil and Mohamed (2017) to collect data from respondents. In addition, several follow-up emails and phone calls were made to get their responses. Of all the questionnaires distributed, 205 were considered usable responses, giving a 26.42% response rate. The low response rate was expected despite the increased awareness of environmental sustainability. The data in this research was recorded and analyzed using the Statistical Package for the Social Sciences (SPSS) Version 26. This research uses descriptive analysis to analyze the data and hypotheses testing using Ordinary Least Squares (OLS) regression analysis.

DATA ANALYSIS AND MEASUREMENT OF VARIABLES

RESPONDENT‘S PROFILE

Descriptive statistics were computed to describe the sample. Table 2 highlights the demographic analysis. The finding shows that most of the respondents are public listed companies in the Central region (56.59%), which comprises several states in Malaysia, such as Selangor, Kuala Lumpur, and Negeri Sembilan. Hence, companies classified within environmentally sensitive industries accounted for 54.15% of the sample, while those classified within environmentally less sensitive industries accounted for 45.85%. The findings also indicate that most of

these companies have been operating for more than 15 years, comprising 163 respondents (79.51%). This indicates that most companies where respondents were employed are at the maturity stage of growth.

TABLE 2. Demographic Analysis (N=205)

	Variables	Frequency	Percentage (%)
Location of companies	Central Region: Selangor, Kuala Lumpur, Negeri Sembilan	116	56.59
	East Cost: Pahang, Terengganu, Kelantan	28	13.66
	Southern Region: Melaka, Johor	25	12.20
	Northern Region: Perlis, Kedah, Pulau Pinang, Perak	25	12.20
	Sabah	6	2.93
	Sarawak	5	2.44
Environmental Sensitivity Industries	Sensitive	111	54.15
	Less sensitive	94	45.85
Years of operation	More than 15 years	163	79.51
	11 to 15 years	35	17.07
	6 to 10 years	5	2.44
	Less than 5 years	2	0.98
EMS Certificate	ISO 14001	83	40.49
	ISO 9001	70	34.15
	Planning to have	29	14.15
	None	23	11.22
Position	Finance manager	153	74.63
	Project manager	29	14.15
	Finance director	15	7.32
	Others (Account manager, Accountant, Account executive)	6	2.93
	Chief finance officer	2	0.98
Years of experience	4 to 6 years	109	53.17
	1 to 3 years	78	38.05
	6 to 10 years	18	8.78
Allocation of environmental cost	Yes	154	75.12
	No	51	24.88

For the environmental management system (EMS) certificate, 83 respondents (40.49%) stated that their companies are adopting ISO 14001 to measure, evaluate, and improve their environmental performance. According to Salim and Padfield (2017), large companies commonly have adopted ISO 14001 to manage their environmental performance. The result shows that the highest number of respondents who participated in the questionnaire survey were 153 finance managers (74.63%). This is followed by 29 project managers (14.15%) and 15 finance directors (7.32%). However, only 2 chief financial officers completed the questionnaire survey with a percentage of 0.98%. There are also 6 respondents from the accounting department, such as an account manager (1 respondent), accountants (4 respondents), and an account executive (1 respondent), that also participated in this research which represents 2.65%. Regarding the years in their current position, most of the respondents have 4 to 6 years of working experience, consisting of 109 respondents (53.17%). It shows that respondents can manage environmental matters with their experience and are sufficiently knowledgeable regarding organizational practices. The result shows that 154 respondents (75.12%) stated that their companies had allocated some budget costs for environmental-related activities. This shows that public listed companies in Malaysia are aware that environmental activities are vital for global sustainability in the future (Jamil & Mohamed 2017).

EMAS ADOPTION

The EMAS adoption refers to the part of management accounting that observes the economic impact of the company's environmental-related activities in terms of physical and monetary-related (Jamil & Mohamed 2017; Mokhtar et al. 2016). Therefore, 24 items are comprised of two types of EMAS adoption tools adapted in this research. 13 items are related to monetary environmental management accounting (MEMA) tools and 11 items are related to physical environmental management accounting (PEMA) tools. All of the variables were measured on 5-point Likert scales. Adopting the measurement of this variable from Jamil and Mohamed (2017), respondents were asked to measure on a scale of 1 (not at all) to 5 (to a great extent) the extent of EMAS adoption. The closest mean score to 5 indicates that EMAS is extensively adopted in public listed companies. The ranking represents the mean scores for EMAS in descending order according to the most extensively adapted to the least adopted by

public listed companies. In Table 3, the finding shows that physical EMA (PEMA) has the highest mean (3.23) compared to monetary EMA (MEMA) (3.14). This result implies that most public listed companies tend to adopt PEMA practice more than MEMA practice. This result is consistent with Jamil et al. (2015) that most SME manufacturing companies in Malaysia tend to practice PEMA compared to MEMA. Mat Yusoh and Tuan Mat (2020) also supported these findings as most Malaysian hotel industry companies tend to adopt PEMA compared to MEMA. Most companies focus more on physical-related environmental activities than the costing process (Doorasamy & Nyahuna 2021).

TABLE 3. Overall Result of Descriptive Statistics for EMAS Adoption (N=205)

EMAS Adoption	Mean	Std. Dev	Min	Max
Physical EMA (PEMA)	3.23	0.77	1.27	4.91
Monetary EMA (MEMA)	3.14	0.68	1.54	4.54

Table 4 and Table 5 show the result of each item of MEMA and PEMA, where the highest four scores in MEMA are on the practice of environmental cost accounting (3.37), post-investment of individual environmental projects (3.27), environmental target costing (3.22), and environmental lifecycle costing (3.20). While the highest scores in PEMA are on the lifecycle inventories (3.51), material flow assessment (3.40), energy flow assessment (3.38), and post-assessment of short-term environmental impact (3.25).

TABLE 4. Descriptive Statistics for MEMA Practices (N=205)

MEMA Practices	Mean	Std. Dev	Min	Max
Environmental cost accounting.	3.37	0.87	2	5
Post-investment of individual environmental projects.	3.27	0.83	1	5
Environmental target costing.	3.22	0.91	1	5
Environmental lifecycle costing.	3.20	0.82	1	5
Post assessment of relevant environmental costing decisions.	3.16	0.84	1	5
Environmentally induced capital expenditure and revenue.	3.13	0.86	1	5
Monetary environmental operational budgeting.	3.12	0.87	1	5
Monetary environmental capital budgeting.	3.11	0.83	1	5
Environmental lifecycle target pricing.	3.07	0.86	1	5
Environmental long-term financial planning.	3.05	0.93	1	5
Monetary environmental project investment appraisal.	3.04	0.92	1	5
Environmental lifecycle budgeting.	3.03	0.88	1	5
Relevant environmental costing.	3.00	0.89	1	5

TABLE 5. Descriptive Statistics for PEMA Practices (N=205)

PEMA Practices	Mean	Std. Dev	Min	Max
Lifecycle inventories.	3.51	0.97	1	5
Material flow assessment.	3.40	0.96	1	5
Energy flow assessment.	3.38	0.95	2	5
Post assessment of short-term environmental impact.	3.25	0.99	1	5
Lifecycle analysis.	3.22	0.89	1	5
Environmental capital impact assessment.	3.16	0.93	1	5
Physical environmental investment appraisal.	3.16	0.87	1	5
Physical environmental budgeting.	3.15	0.87	1	5
Long-term physical environmental planning.	3.15	0.96	1	5
Relevant environmental impacts.	3.08	0.96	1	5
Post investment assessment of physical environmental investment appraisal.	3.07	0.87	1	5

Overall, the mean scores for both MEMA adoption and PEMA adoption show a moderate level among the public listed companies in Malaysia. Even though most of the respondents have allocated some budget for environmental activities, the result suggests that the adoption of EMAS is not at an encouraging level. The result strongly supports this statement that the mean scores for all EMAS adoption are three on average, indicating a moderate adoption level within the organization.

INSTITUTIONAL PRESSURES

According to Che Ku Kassim et al. (2021), the institutional theory suits well to explain the influence of institutional pressures on EMAS adoption. Institutional theory suggests that coercive, mimetic, and normative pressure influence the organization to adopt a new practice. There are 18 items to examine the institutional pressures influencing EMAS adoption among Malaysian public listed companies. 12 items related to coercive pressure from formal and informal pressures exerted on organizations such as government agencies, and other stakeholders had led to changes in an organization's policy. Furthermore, 2 items are adapted to measure normative pressures: environmental practices/training and membership in an accounting body. Normative pressure describes the effect of professional standards and the influence of professional communities on organizational characteristics. While mimetic pressure results from mimicking the actions of other organizations.

Therefore, the variable of mimetic pressure comprises 4 items: competitors, other industrial organizations, other leaders in the industry, and multinational organizations. An organization mimics other actions when there is a lack of clarity in its organizational goals, environmental uncertainty, or technology is not well understood (Latif et al., 2020).

All of the variables were measured on 5-point Likert scale. Adapting the measurement from Jamil and Mohamed (2017), respondents were asked to measure on a scale of 1 (strongly disagree) to 5 (strongly agree) institutional pressures that influence EMAS adoption among the public listed companies in Malaysia. Based on the overall mean score, the EMAS adoption in Malaysian public listed companies is mainly influenced by coercive pressures. In Table 6, the result shows that the coercive pressure has the highest mean (3.72), followed by the normative pressure (3.69) and mimetic pressure (3.46). This result is consistent with Jamil et al. (2015) that coercive pressure significantly influences EMAS adoption among SME manufacturing companies in Malaysia. A recent study by Ahmad et al. (2020) supported this finding that coercive pressures imposed by the authorities had led to being the most dominant factor for implementing EMAS among Shared Services Centres (SSC) in Malaysia.

TABLE 6. Overall Result of Descriptive Statistics for Institutional Pressures (N=205)

Institutional Pressure	Mean	Std. Dev	Min	Max
Coercive Pressure	3.72	0.51	1.92	4.58
Normative Pressure	3.69	0.68	2.00	5.00
Mimetic Pressure	3.46	0.51	2.00	4.75

The results of the descriptive statistics for each of the institutional pressures influencing EMAS adoption are reported in Table 7. The highest mean is compliance with environmental laws (3.98) and government regulations (3.84). These two items are related to coercive pressure. The result shows that EMAS has been moderately adopted among the public listed companies in Malaysia, which is consistent with the view of institutional theory.

TABLE 7. Descriptive Statistics for Institutional Pressures (N=205)

Institutional Pressure	Mean	Std. Dev	Min	Max
Coercive Pressure				
Environmental laws	3.98	0.84	2	5
Government regulations	3.84	0.92	1	5
Pollution incidents law	3.82	0.85	2	5
Government pollution standards	3.77	0.86	2	5
Newspaper and TV	3.73	0.83	2	5
Financial Institutions	3.70	0.83	1	5
Local Communities	3.70	0.92	1	5
Company's shareholders	3.69	0.89	1	5
Company's head office	3.64	0.78	2	5
Company's customers	3.64	0.69	2	5
Company's labour union	3.56	0.83	1	5
Environmental groups	3.55	0.81	1	5
Normative Pressure				
Membership in an accounting body	3.77	0.82	2	5
Environmental practices/training	3.60	0.81	2	5
Mimetic Pressure				
Other leaders in the industry	3.58	0.69	2	5
Competitors	3.53	0.71	2	5
Other industrial organizations	3.48	0.72	2	5
Multinationals organizations	3.28	0.68	1	5

CORRELATION ANALYSIS

The relationship among the variables has been tested through Pearson Correlation Analysis. Table 8 describes the Pearson correlation value of EMAS adoption level with institutional pressures. The findings show a significant and moderate to strong positive relationship between EMAS adoption level and institutional pressures. The value of the correlation coefficient for coercive pressure (0.77), normative pressure (0.47), and mimetic pressure (0.60) are significant at a 0.01 level. The correlation matrix indicates no multicollinearity issue exists as no correlation is above 0.8 among independent variables. Thus, Ordinary Least Squares (OLS) regression analysis can be conducted to test the research hypotheses developed in this research. The OLS method can be defined as a linear regression technique used to estimate the unknown parameters in a model. This method minimizes the sum of squared vertical distances between the observed responses in the dataset and the responses predicted by the linear approximation.

TABLE 8. Correlation Matrix (N=205)

	Coercive Pressure	Normative Pressure	Mimetic Pressure	EMAS Adoption
Coercive Pressure	1			
Normative Pressure	0.58**	1		
Mimetic Pressure	0.64**	0.64**	1	
EMAS Adoption	0.77**	0.47**	0.60**	1

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

THE INFLUENCE OF INSTITUTIONAL PRESSURES ON EMAS ADOPTION

Ordinary Least Squares (OLS) regression analysis was performed to meet the second research objective: to examine institutional pressures that influence EMAS adoption among public listed companies in Malaysia. To examine institutional pressures on EMAS adoption, the OLS regression analysis was performed based on the following model:

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \varepsilon$$

Where: Y= EMAS Adoption
X1= Coercive Pressure
X2= Normative Pressure
X3= Mimetic Pressure
β0=Intercept, β1=Coefficient, β2=Coefficient, ε= Error term

The results show that all assumptions for using OLS regression analysis are fulfilled: the variables have a linear relationship, no multicollinearity, no autocorrelation, homoscedasticity, and normal distribution of errors. Therefore, violating these assumptions may reduce the validity of the results produced by the model. In this research, the results of the OLS regression analysis in Table 9 show that the regression model is significant ($p < 0.01$ and $F=106.97$). R^2 value is 0.62, which means 62% of the variation in EMAS adoption (dependent variable) can be described by the three independent variables: coercive pressure, normative pressure, and mimetic pressure. According to Sekaran and Bougie (2016), the largest beta value portrays the strongest unique contribution made by the independent variables to the dependent variable. The negative value of the beta explained the inverse relationship between the independent and dependent variables. In this research, the OLS regression analysis results show that coercive and mimetic pressure significantly influences EMAS adoption in Malaysian public listed companies. Table 9 displays the beta value for coercive pressure-EMAS adoption relationship is 0.91 (significant at $p < 0.01$) and mimetic value-EMAS adoption is 0.24 (significant at $p < 0.05$). However, the result appears that normative pressure does not contribute significantly to the EMAS adoption among public listed companies in Malaysia.

TABLE 9. OLS Regression analysis result (N=205)

Variable	Beta	T-Value	Significant
Coercive Pressure	0.91	11.18	0.00**
Normative Pressure	-0.03	-0.42	0.67
Mimetic Pressure	0.24	2.89	0.04*
R – Square		0.62	
Adjusted R – Square		0.61	

** Correlation is significant at the 0.01 level (2-tailed)
* Correlation is significant at the 0.05 level (2-tailed)

TABLE 10. Result of hypotheses testing

Hypotheses	Findings
H_1: Coercive pressure influences EMAS adoption among the public listed companies in Malaysia.	Supported
H_2: Normative pressure influences EMAS adoption among the public listed companies in Malaysia.	Not supported
H_3: Mimetic pressure influences EMAS adoption among the public listed companies in Malaysia.	Supported

This research tested three hypotheses (H_1, H_2, and H_3). Based on Table 10, coercive pressure significantly influences EMAS adoption among the public listed companies in Malaysia, thus supporting H_1. This finding is consistent with Che Ku Kassim et al. (2021) and Mat Yusoh and Tuan Mat (2020) observed that adopting EMAS is influenced by coercive pressure. In other words, better regulations enforcement by the government, policymakers, and regulatory bodies will positively affect the intention and willingness of companies to adopt EMAS (Ahmad et al., 2020).

However, H_2 is not supported. Such results indicate that normative pressure does not significantly influence EMAS adoption among the public listed companies in Malaysia. This result is consistent with Jamil et al. (2015) found that normative pressure, which can be in the form of membership in an accounting body and environmental practices/training is not a significant pressure toward EMAS adoption. This result contradicts the findings of a study carried out by Amoako et al. (2021), which reports normative pressures to have a significant effect on EMAS adoption.

This research also shows mimetic pressure significantly influences EMAS adoption among the public listed companies in Malaysia, thus supporting H_3. This finding is consistent with Razak et al. (2020) and Amoako et al. (2021), which found a significant association of mimetic pressure that arises when companies engage in a competition seeking more outstanding performance. In addition, these findings show that mimetic pressure becomes institutionalized when the best practices of other companies are recognized because of their institutional acceptance.

The regression analysis provides a more detailed description of the relationships between the dependent and independent variables. In summary, the findings of this research are consistent with the institutional theory that EMAS adoption is significantly associated with coercive and normative pressure. This pressure will then influence company policy and affect their management accounting practices, including EMAS adoption. In addition, some insights into the insignificant of normative pressure in influencing EMAS adoption were also provided. From the institutional perspective, organizations interact within their organizational field in ways perceived as acceptable by various constituents in that environment.

DISCUSSION

EMAS is an effective tool to overcome environmental problems and mitigate the negative impact on the environment due to business operations. In recent years, the importance of the sustainability agenda among public listed companies has become inevitable. As per the first objective of the research, the findings implicate that majority of the public listed companies in Malaysia have moderate adoption of EMAS. The public listed companies in Malaysia may also use the findings of this research that the level of EMAS adoption was not at an encouraging level. However, most of the companies in this research have some environmental-related budgets. The growing environmental issues and better institutional pressures have forced companies to adopt EMAS (Che Ku Kassim et al. 2021; Chathurangani & Hemathilake 2019). This finding concludes the commitment of Malaysian public listed companies to EMAS adoption still needs to be improved.

This research explores the effects of institutional pressures on EMAS adoption. As per the second objective of the research, the finding reported that coercive and mimetic pressures have a statistically significant influence on EMAS adoption in the context of public listed companies in Malaysia. Therefore, enhancing these pressures on companies is necessary to become more willing to adopt new practices such as EMAS. Meanwhile, the OLS regression analysis suggested that coercive pressure derived from standards and regulations designed by the government has the most substantial influence on EMAS adoption. Therefore, the government should motivate companies to adopt EMAS through improved incentives for compliance with environmental rules and regulations (Jamil & Mohamed 2017). This research found that the implementation of environmental practices among both local and multi-national competitors can affect the willingness of companies to adopt EMAS in their organizations. Companies facing mimetic pressure tend to have an impetus to adopt EMAS as the organizations try to seek social legitimacy and reputation (Amoako et al. 2021). Otherwise, the companies will be punished by their stakeholders, such as the government and customers, leading to losing market share.

Even though the main research hypotheses on the institutional pressure, which is normative pressure on EMAS adoption, cannot be accepted, the results show the possibility of these pressures on EMAS adoption among public listed companies in Malaysia. Insufficient environmental knowledge and skills restrict the integration of environmental aspects into the management accounting system (Latif et al. 2020; Bouliane et al. 2018). Both academics and practitioners of management accounting can notice that these pressures may influence EMAS adoption. Professional bodies such as ACCA, CIMA, ICAEW, and MICPA should promote environmental management accounting and provide a better framework for environmental practices. Apart from that, applying institutional theory provides valuable information to the present knowledge by exploring more explanations for EMAS adoption in an unexplored context in Malaysia.

CONCLUSIONS, IMPLICATIONS, AND LIMITATIONS

This research emphasizes the imperative role of various authorities in championing environmental sustainability (Jamil & Mohamed 2017). From the institutional theory perspective, institutional pressures stimulate companies to implement environmental management (Tran et al. 2020). Theoretical insights offered by new institutional sociology argue that institutional forces comprising the government, the profession and the society within an

organization shape the company's structure and determine its actions (DiMaggio & Powell 1983). The findings appear to suggest that such forces may have likely been the factors influencing EMAS adoption among Malaysian PLCs. Furthermore, the framework embraces an inclusive consideration of organizations' internal and external contexts. Accordingly, this research can advance understanding of the interaction between institutional pressures for change and organizational behaviour, specifically EMAS adoption. The current research reveals some support for the new institutional sociology perspective of institutional theory, where coercive and normative pressure influenced EMAS adoption positively. Likewise, it can be argued that legislation plays a dynamic role in influencing PLCs concerning EMAS adoption in Malaysia (Mohamed & Jamil 2018). In the environmental context of emerging economies, it is well understood that coercive pressure is one of the crucial ways to implement environmental practices. This may be because governments play an essential role in protecting the environment and significantly affect companies' pro-environmental behaviour and decision-making.

Therefore, the government should update and enforce environmental regulations to prevent public listed companies from causing adverse environmental impacts. Furthermore, the Ministry of Environment and Water should collaborate with the Ministry of Energy and Natural Resources in promoting EMAS adoption by issuing specific environmental guidelines and better enforcement of the environmental regulations in Malaysia. Furthermore, environmental laws in Malaysia, such as Environmental Quality Act, need to be reviewed to give more power to prosecute irresponsible companies. This research also suggests that respective bodies must create awareness of environmental management's importance through environmental education programs. Furthermore, the moderate level of EMAS adoption might be due to respondents' lack of knowledge and awareness regarding environmental management (Wang et al. 2018). Thus, finance managers, accountants, and project managers are encouraged to participate in training related to environmental management. They also need to be updated with the latest development of EMAS so that this tool can be applied among public listed companies in Malaysia. Authorities in charge of the capital market, such as Bursa Malaysia, should make environmental reporting a mandatory listing rule. Bursa Malaysia also should provide guidance documents and training on environmental reporting to offer reassurance and promote the environmental commitment of companies operating in Malaysia. Furthermore, tax authorities can stimulate companies' interest by applying favoured green tax incentives.

Despite the contributions of this research to the growing body of literature on EMAS, limitations are almost inevitable. The result of this quantitative research may not capture an in-depth understanding of the subject phenomena. Besides that, unreliability and inaccuracy in data collection would happen because some of the respondents may answer the questionnaire without reading and interpreting the contents, and this caused invalid data. For future research, qualitative approaches, such as case studies, in-depth interviews, and experimental designs, may provide in-depth and detailed knowledge that further strengthens the findings of the survey-based approach. In addition, future researchers also can investigate the contribution of EMAS adoption toward value creation in various countries. Regardless of these limitations, the findings of this research make a valuable contribution to the existing management accounting literature by providing a helpful understanding of EMAS adoption in Malaysia.

REFERENCES

Ahmad, E.M., Ishak, N.A., Noruddin, N.A.A., Ghani, E.K. & Ismail, R.F. 2020. Environmental management accounting practices among shared services centres. *Science International* (*Lahore*) 32(4): 471-476.

Amoako, G.K., Adam, A.M., Tackie, G. & Arthur, C.L. 2021. Environmental accountability practices of environmentally sensitive firms in Ghana: Does institutional isomorphism matter?. *Sustainability* 13: 1-14.

Ariffin, A.R.M. 2016. Environmental management accounting (EMA): Is there a need?. *International Journal of Liberal Arts and Social Science* 5(1): 97–103.

Ariffin, A.R.M. 2020. The perceived attributes and its relation to the adoption of the practice: Malaysia evidence. *International Journal of Recent Technology and Engineering* 8(6): 3186-3189.

Atan, R., Alam, M.M., Said, J. & Zamri, M. 2018. The impacts of environmental, social, and governance factors on firm performance: Panel study of Malaysian companies, *Management of Environmental Quality: An International Journal* 29(2): 182-194

Bouliane, E., Keddie, L.S. & Postaire, M. 2018. (Non) Coverage of sustainability within the French professional accounting education program. *Sustainability Accounting*, *Management and Policy Journal* 9(3): 313-335.

Che Ku Kassim, C.K.K., Adnan, N.L. & Ali, R. 2021. Institutional pressures influencing environmental management accounting adoption by Malaysian local governments. *Journal of Accounting Organizational Change* 18(3): 440-460.

Chathurangani, H.B.P. & Hemathilake, D.H.U. 2019. Relationship between institutional pressures and environmental management accounting adoption with special reference to small and medium manufacturing entities in Anuradhapura District, *IRE Journals* 2(7): 84-93.

Doorasamy, M. 2016. The perceptions of management on the benefits of adopting an environmental management accounting system as a waste management tool. *Foundations of Management* 8: 93-106.

Doorasamy, M. & Nyahuna, T. 2021. Application of Environmental Management Accounting by small and medium enterprises in South Africa, *Environmental Economics* 12(1): 103-111.

Ferdous, M.I., Adams, C.A. & Boyce, G. 2019. Institutional drivers of environmental management accounting adoption in public sector water organizations. *Accounting, Auditing, and Accountability Journal* 32(4): 984-1012.

Gunawardena, Y. & Dissanayake, K. 2021. Environmental management accounting as a perspective for hotel sustainability a case study from a Sri Lankan hotel, *International Journal of Accounting & Business Finance* 7(1): 54-79.

Hossain, M.M. 2019. Environmental accounting challenges of selected manufacturing enterprises in Bangladesh. *Open Journal of Business and Management* 7(2): 709-727

Huseno, T. 2018. The Environmental Management Accounting (EMA) Perspective Calculation of Environmental Management Environment in Riau. *Jurnal Aplikasi Manajemen* 16(4): 714-721.

Jamil, C.Z.M., Mohamed, R., Muhammad, F. & Ali, A. 2015. Environmental management accounting practices in small-medium manufacturing firms. *Procedia-Social and Behavioral Sciences* 172: 619-626.

Jamil, C.Z.M. & Mohamed, R. 2017. Antecedent factors of environmental management accounting practice. *International Journal of Economic Research* 14(16): 543-553.

Khan, N.U., Rasli, A.M., Hassan, M.A., Noordin, N.F.M. & Aamir, M. 2017. Assessment of imbalance among environmental and economic performance within Malaysian manufacturing industry: A Sustainable Approach. *International Journal of Energy Economics and Policy* 7(4): 149-155.

Latan, H., Jabbour, C.J.C., de Sousa Jabbour, A.B.L., Wamba, S.F. & Shahbaz, M. 2018. Effects of environmental strategy, environmental uncertainty and top management's commitment on corporate environmental performance: The role of environmental management accounting. *Journal of Cleaner Production* 180: 297–306.

Latif, B., Mahmood, Z., San, O.T., Said, R.M. & Bakhsh, A. 2020. Coercive, normative, and mimetic pressures as drivers of environmental management accounting adoption. *Sustainability* 12: 1-14.

Le, T.T., Nguyen, T.M.A. & Phan, T.T.H. 2019. Environmental management accounting and performance efficiency in the Vietnamese construction material industry-A managerial implication for sustainable development. *Sustainability* 11(19): 5152.

Mat Yusoh, N.N.A. & Tuan Mat, T.Z. 2020. Environmental management accounting adoption barriers among Malaysian hotel companies. *International Journal of Financial Research* 11(3): 31–42.

Mohamed, R. & Jamil, C.Z.M. 2018. Environmental Management Accounting and environmental performance. *Asia Proceedings of Social Sciences* 1(2): 33-36.

Mokhtar, N., Zulkifli, N. & Jusoh, R. 2016. Corporate characteristics and environmental management accounting (EMA) implementation: Evidence from Malaysian Public Listed Companies (PLCs). *Journal of Cleaner Production* 136: 1-12.

Qian, W., Horisch, J. & Schaltegger, S. 2018. Environmental management accounting and its effects on carbon management and disclosure quality, *Journal of Cleaner Production* 174: 1608-1619.

Phan, T.N., Baird, K. & Su, S. 2017. The use and effectiveness of environmental management accounting. *Journal of Environmental Management* 24(4): 355-374.

Pratiwi, Y.N., Meutia, I. & Syamsurijal 2020. The effect of environmental management accounting on corporate sustainability. *Binus Business Review* 11(1): 43-49.

Rahman, M.S., Rahman, M.M. & Deb, B.C. 2021. Competitive cost advantage: an application of environmental accounting and management approach with reference to Bangladesh. *The Cost and Management* 49(3): 47-59.

Rasit, Z.A., Hamidon, N.F., Tarmuji, I., Hamid, N.A. & Rashid, N. 2020. Environmental management accounting implementation and environmental performance through enhanced internal process innovation. *Journal of Advanced Research in Dynamical and Control Systems* 12(1): 46-55.

Rasit, Z.A., Zakaria, M., Hashim, M., Ramli, A. & Mohamed, M. 2019. Green supply chain management (GSCM) practices for sustainability performance: An empirical evidence of Malaysian SMEs. *International Journal of Financial Research* 10(3): 371-379.

Razak, F.N.A., Ramli, A. & Rasit, Z.A. 2020. Organization isomorphism as determinants of environmental management accounting practices in Malaysian public listed companies. *Humanities and Social Sciences Letters* 8(1): 110–122.

Ribeiro, V., Monteiro, S. & Moura, A. 2016. Determinants of sustainability E-reporting in Portuguese municipalities: An institutional and legitimacy theoretical framework. *Corporate Responsibility and Stakeholding* 10: 131-163.

Salim, H.K. & Padfield, R. 2017. Environmental management system in the food & beverage sector: A case study from Malaysia. *Chemical Engineering Transactions* 56: 253–258.

Sekaran, U. & Bougie, R. 2016. *Research Business Methods: A Skill Building Approach.* (7th ed.). United Kingdom: John Wiley & Son.

Susanto, A. & Meiryani, M. 2019. Antecedents of Environmental Management Accounting and environmental performance: Evidence from Indonesian Small and Medium Enterprises. *International Journal of Energy Economics and Policy* 9(6): 401-407.

Tran, N.H., Hoang, T.H. & Nguyen, T.T.H. 2020. Environmental Management Accounting perception an implementation in the automobile industry in Vietnam. *Journal of Asian Finance, Economics, and Business* 7(12): 941-949.

Wang, S., Wang, H. & Wang, J. 2018. Exploring the effects of institutional pressures on the implementation of environmental management accounting: Do top management support and perceived benefit work?, *Business Strategy and the Environment* 28(1): 233-243.

Yahaya, I. & Abidin, N.Z. 2020. The implementation of environmental practices by Malaysian contractors. *International Journal of Integrated Engineering* 12(4): 310-318.

Zaradat, Z., Taha, R., Zin, M.R., Zakarian, W.Z.W. & Aziz, R.A. 2021. The use and implications of management accounting practices in small and medium-sized enterprises. *Asia-Pacific Management Accounting Journal* 16(1): 249-295.

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