



ORGANISATION ISOMORPHISM AS DETERMINANTS OF ENVIRONMENTAL MANAGEMENT ACCOUNTING PRACTICES IN MALAYSIAN PUBLIC LISTED COMPANIES

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ABSTRACT

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Rising environmental issues due to company activities and public demand for a better environment have caused companies to face pressures from their stakeholders. However, in Malaysia, the implementation level of environmental practices is still moderate among public listed companies. This study, therefore, examines organisational isomorphism as the determinant of the extent of environmental management accounting practices by Malaysian public listed companies in the Main Market, based on institutional theory. Coercive, normative and mimetic isomorphisms were taken as the determinants of the extent of usage of environmental management accounting. A survey method was used, consisting of sending an online questionnaire for data collection to Malaysian public listed companies. Statistical analyses were used to analyse the variables. The survey results revealed that these companies have, to a great extent, implemented environmental management accounting. It was also found that coercive isomorphism significantly influenced the environmental management accounting practices of Malaysian public listed companies. This suggests that companies will implement environmentally-related practices with the existence of coercive pressures, derived from government and shareholders. The implementation of environmental management accounting is beneficial in overcoming the problem of traditional management accounting, which fails to incorporate hidden environmental costs. Thus, the empirical findings from the study put forth crucial, specific factors that could aid the government in encouraging companies to become responsible, and to contribute to green initiatives through environmental management accounting practices.

Contribution/Originality: The paper's primary contribution is finding that coercive isomorphism via pressure from the government is the most effective way for Malaysian public listed companies to implement environmental management accounting practices.

1. INTRODUCTION

In the 11th Malaysian Plan (11MP), one of the goals is to take urgent action to combat climate change and its impact on the environment (SDG13). This will spearhead the country's support for the United Nation's 2030 Development Agenda (The Star Online, 2017a). One of the methods that can be used to achieve this goal is the implementation of Environmental Management Accounting (EMA), which helps to satisfy stakeholder concerns towards the environment, and also helps the company manage its costs (Che Zuriana, Rapih, Faidzulaini, & Amin, 2015). Concerns about environmental issues have also triggered environmental sustainability practices among business organisations (Abdul Aziz, Ong, Foong, Senik, & Attan, 2018).

As part of a developing country, Malaysian companies are no exception to the concern about environmental issues. The Department of Statistics, Malaysia has reported that many sectors contribute to pollution by air, water or sound such as manufacturing, mining and quarrying, as well as construction sectors (Department of Statistics Malaysia, 2016). Over the years, many environmental issues caused by company activities in Malaysia have been reported in the local news. Such issues bring complaints and dissatisfaction from the public and reduce trust and loyalty towards the company concerned. For example, the Department of Environment received a total of 649 complaints throughout 2017 alone in the district of Segamat, Johor involving air and water quality, as well as an oil spill (Mohamed, 2017). 84% of those complaints involved air pollution, the majority of which is due to company activities including logging. Other activities such as quarry operations have caused the neighbouring area in Hulu Langat to suffer from poor air quality for the past 10 years (Zulfadli, 2018) while in Kuala Lumpur, ammonia disposal by a local factory was complained about by the public (Nur Nazlina, 2018).

As one of the major contributors to environmental pollution, the construction sector has put the environment at risk as a result of their increasing construction activities (Nagapan, Rahman, Asmi, & Adnan, 2013; Thongkamsuk, Sudasna, & Tondee, 2017). Due to poor waste management in the building sector in Malaysia, the growing amount of construction and demolition waste is of great concern to company stakeholders (Nagapan et al., 2013). Similarly the output of other related sectors like manufacturing, quarrying and mining often brings negative impacts to air quality. During the construction of buildings and transportation infrastructures such as highways, the heavy-duty diesel (HDD) equipment used (Rasdorf, Lewis, Arocho, & Hummer, 2015) emitted Nitrogen Oxide gas (NO_x), Hydrocarbon gas (HC) and Carbon Monoxide gas (CO) which are antecedents for the thinning of the ozone layer. Thus, public health is another concern of diesel exhaust since it could cause lung damage and eventually death (Rasdorf et al., 2015).

Highlighted in a study by Che Zuriana et al. (2015) the level of EMA implementation is still low in Malaysia. In addition to that, a recent study by Abdul Aziz et al. (2018) revealed that the extent of green initiatives adopted by Malaysian public listed companies are at a moderate level. According to ACCA (2010) even though Malaysia scored the highest in the developing countries category in Southeast Asia, the percentage of those who reported on sustainability was low compared with the number of businesses in the country. Bartolomeo et al. (2000) pointed out that most companies only adopted a minimal level of environmental management practices instead of integrating the entire EMA system into their business activities. Consequently, this has resulted in the slow growth of EMA implementation (Doorasamy, 2015).

Although the Malaysian government has shown some effort to support the United Nation's 2030 Development Agenda, some of the environmental laws and policies are not properly implemented. This is due to lack of enforcement, non-implementation of the law that "polluter pays", lack of monitoring and continuous assessment, lack of a holistic approach and inadequate information about natural resources. Scientific research (Mohammad, 2011). IFAC (2005) also reported that the shareholders of the companies that did not implement environmental practices did not realise the value that reducing environmental impact might bring to their companies (IFAC, 2005). According to Rohati, Norlida, and Jamal (2016) environmental issues also occur due to a lack of environmental training for employees, because managers feel it is unnecessary. This, therefore, leads to a lack of awareness among employees of the importance of conserving the environment. It was also reported that there is a lack of budget provision for Malaysian environmental enforcement (The Star Online, 2017b). This gives rise to waste and excessive use of energy, which in turn cause the company to suffer from poor performance. There is also a lack of awareness of environmental sustainability among customers in Asia compared with customers in developed economies (Ahmat, Ahmad, & Mohd, 2018). Consumer behaviour affects company activities, as a result of which, when there is no demand for environmentally friendly products, companies do not implement environmental practices.

The implementation of EMA can arise from elements of institutional theory, namely coercive isomorphism, normative isomorphism and mimetic isomorphism (Phan & Baird, 2015). A review of the literature indicated that there are still inconclusive results on the factors influencing the implementation of EMA, based on institutional theory. Thus, this study aims to shed some light on the relationship between coercive isomorphism, normative isomorphism and mimetic isomorphism, and the extent of usage of EMA by public listed companies in Malaysia. Therefore, the findings from this paper provide empirical evidence on the organisation's isomorphism as a determinant of EMA practices. The remainder of the paper constitutes section two which reviews relevant literature on EMA, section three which discusses the theoretical lens, followed by hypotheses development and the methodology of the study in sections four and five respectively. The results and discussion of the findings are presented in section six, while the final section concludes the paper.

2. LITERATURE REVIEW

2.1. Management Accounting and Environmental Management Accounting

Management accounting is a part of accounting which involves the process of identifying, measuring, accumulating, analysing, preparing, interpreting and communicating information that helps managers achieve organisational objectives (Horngren, Sundem, Stratton, Burgstahler, & Schatzberg, 2007). According to Pember and Lemon (2014) management accounting has been utilised by many companies to help manage their finances, therefore it makes business sense for them also to utilise its tools to help manage their environmental performance. As more companies become interested in using management accounting to manage their environmental

performance, EMA has gained recognition from countries all over the world (Phan, Baird, & Su, 2017). According to Jasch (2003) EMA is “a combined approach which provides for the transition of data from financial accounting, cost accounting and material flow balances to increase material efficiency, reduce environmental impact and risk, and reduce costs of environmental protection”. Setthasakko (2010) on the other hand, stated that the EMA is “a business tool that provides essential data for corporate environmental management ranging from simple to comprehensive methods that link physical and monetary information for decision making”. Although there is no exact definition or scope of, or procedure for EMA (Setthasakko, 2010) it is connected with elements of physical and monetary information relating to environmental protection. This study, therefore, is based on the definition provided by Jasch (2003) since it incorporates the elements of environmental protection and physical and monetary EMA.

Traditional accounting focuses predominantly on profitability while ignoring other major business impacts such as climate change. Thus, EMA has been developed in response to the constraints of traditional accounting systems which fail to report separately on or track environmental costs (Bebbington, Gray, Hibbitt, & Kirk, 2001; Bracci & Maran, 2013; Burritt, 2005; Epstein, 1996; Ferreira, 2004; Herbohn, 2005; Jasch, 2003; USEPA, 1998). This new accounting field has therefore received increased attention (Phan et al., 2017) due to its ability to integrate environmental aspects in the management decision-making process. Zhang (2014) hence believes that a great extent of environmental management practices, such as reducing energy consumption and resource costs, help in maintaining a sustainable global economic growth. Despite the difference in size of companies that implement EMA, it is still able to provide economic and environmental benefits (Christ & Burritt, 2013; Phan et al., 2017). The study of environmental management by Phan et al. (2017) also revealed that the implementation of EMA provides a significant impact on the environmental performance of a company. They reported that company managers will be more aware of environmental issues, and be able to respond to external pressures (e.g. government, competitors and customers) better in order to achieve desirable environmental outcomes.

2.2. Environmental Management Accounting Practices

KPMG (2005) and Llena, Moneva, and Hernandez (2007) reported that an increasing trend in companies to report their environmental practices can be linked to the awareness and concerns of the public on the environmental impact of business activities, government pressure on the effort to generate more environmentally sustainable businesses and the initiative of the companies themselves to provide voluntary disclosure on their environmental practices to their stakeholders. Herzig and Schaltegger (2006) found that environmental reporting has emerged and received increased attention, especially in European countries such as the UK, Norway and Germany, where there are regulations in place regarding company reporting on environmental practices to stakeholders.

In the Malaysian context, it reported that there has been a substantial development of voluntary environmental reporting which arose from the pressure to maintain the reputation and sustainability of a company, on top of enhancing shareholder value and having environmental awareness of the stakeholders (Jangu, Joseph, & Madi, 2007; Thompson & Zakaria, 2004). ACCA Malaysia has also indicated that the quality of sustainability and CSR reporting of Malaysian companies has improved (ACCA, 2011). Since 2006, Malaysia's central stock exchange, Bursa Malaysia, has taken the initiative to encourage public listed companies to achieve sustainability through the provision of environmental disclosures. With the minimum requirement for public listed companies to disclose their CSR information in a section of their annual reports, which was set by Bursa Malaysia, there were only a few companies that went beyond such practice (Mohd Khalid, Lord, & Dixon, 2012).

There are studies reporting that the level of EMA implementation is still low (Christ & Burritt, 2013; Ferreira, Moulang, & Hendro, 2010) especially in developing countries like Malaysia (Che Zuriana et al., 2015). According to (Bartolomeo et al., 2000) most companies that implemented EMA only adopted a minimal level of environmental management practices instead of integrating the entire EMA system into their business activities, which (Doorasamy, 2015) finds to be the reason for the slow growth of EMA. Other than that, IFAC (2005) reported that one of the reasons for the weak practice of EMA is that managers do not realise the value that reducing environmental impact might bring to the companies. This will result in an inability to reduce environmental costs. However, Burritt (2005) believes that with an effective role of regulatory bodies, the environmental awareness of managers and pressure from various stakeholders will encourage the managers to further consider implementing EMA to a greater extent.

Prior literature found that the usage of both physical and monetary EMA was below the midpoint of the theoretical range (Che Zuriana et al., 2015; Christ & Burritt, 2013; Ferreira. et al., 2010; Phan et al., 2017). It was suggested that the low level of physical and monetary EMA implementation arose from the early stage of developing EMA, since it is a recent innovation in the field of management accounting (Ferreira. et al., 2010). Physical EMA involves environmental information about a company, often expressed in terms of physical units such as kilograms (Burritt, Hahn, & Schaltegger, 2002). Since all physical inputs (e.g. water, energy and materials) will ultimately become outputs, such as physical products or waste and emission, IFAC (2005) hence highlighted that all physical inputs and outputs need to be tracked to ensure no significant amount is excluded. Traditional cost accounting methods have failed to separately quantify and monetise non-product output (UNSD, 2001). Therefore, the usage of a physical EMA tool, such as material flow analysis, helps to provide essential information on the usage of physical inputs and outputs (e.g., usage of water, energy and emissions). Monetary EMA acts as a

tool in tracking, tracing and treating any costs incurred by the company that arise from business activities related to the environment (Schaltegger & Burritt, 2010). It incorporates the monetary impacts of the company on the natural environment by focusing on the environmental impact information expressed in monetary units such as the costs incurred to treat waste (Burritt. et al., 2002).

3. INSTITUTIONAL THEORY

According to Greif (2006) institutions consist of company rules, beliefs and norms. These elements are weaved together to form a set of constraints on human behaviour, directing the acceptable and unacceptable. Prior studies have also adopted other theories such as stakeholder theory (e.g. (Bayoud, Kavanagh, & Slaughter, 2012; Roberts, 1992)), legitimacy theory (e.g. (Braam, de Weerd, Hauck, & Huijbregts, 2016; Taylor, Sulaiman, & Sheahan, 2001)), theory of planned behaviour (TPB) (e.g. (Ajzen, 1991; Cordano & Frieze, 2000; Greaves, Zibarras, & Stride, 2013; Ibrahim & Jaafar, 2016)), Value-Belief-Norm (VBN) theory (e.g. (Stern, 2000)) and Ability-Motivation-Opportunity (AMO) theory (e.g. (Renwick, Redman, & Maguire, 2013)). This study, however, adopted institutional theory since it has been widely recognised as a prevalent and powerful justification for company practices (Berrone, Fosfuri, Gelabert, & Gomez-Mejia, 2013; DiMaggio & Powell, 1983; Tina Dacin, Goodstein, & Richard Scott, 2002) and is able to highlight the importance of the institutional environment to organisational structure and actions (Teo, Wei, & Benbasat, 2003).

3.1. Institutional Isomorphism

The institutional theory claims that companies will become similar to each other when isomorphic pressures and pressures for legitimacy exist (DiMaggio & Powell, 1983). Companies that operate within the same field tend to become homogenous over time due to various pressures exerted upon them. Institutional isomorphism can be categorised into three different isomorphism processes, namely coercive isomorphism, normative isomorphism and mimetic isomorphism (DiMaggio & Powell, 1983).

Coercive isomorphism can derive from either formal or informal pressure exerted on companies by other organisations which they are dependent on, and by the expectations of the environment in which they operate, which can be in the form of force or persuasion (DiMaggio & Powell, 1983). Coercive pressure may arise from government, especially in developing countries where government agencies exert a significant amount of pressure on business policies and practices (Park & Luo, 2001). Coercive pressure can also derive from shareholders. Since shareholders are considered powerful and can highly influence the organisation's decision making, they can exert pressure in prescribing certain practices (Zhu, Sarkis, & Lai, 2013).

For a particular industry, normative isomorphism can be cultivated through professionalization (DiMaggio & Powell, 1983). Beddewela and Fairbrass (2015) also agreed that companies can adopt new strategies and practices being promoted by professionals. There are two facets of professionalisation which are recognised as important sources of isomorphism. Firstly, normative isomorphism can be cultivated through formal education (Hoffman, 1999). A specific area of education, for example accounting, can serve as a source of normative isomorphism. This can be seen in a situation when companies are hiring managers with an accounting education background, or when more individuals pursue their education in the accounting area. In these circumstances, there is a high possibility that these companies develop common norms of behaviour since they are hiring managers with common knowledge. Secondly, the norms of behaviour can be diffused quickly through professional networking, which includes inter-organisational transfers of personnel and having the same consultants.

Mimetic isomorphism originates from uncertainty which may arise from certain situations (DiMaggio & Powell, 1983). This includes the way companies act when they face uncertainty in achieving goals that are vague or ambiguous. When company goals are unclear, they tend to look to other companies to model their strategies on. This often results in them mimicking the practices of other companies, by learning based on what the other company does and by observing the action that decision-makers can adopt in their practices (Hannan & Freeman, 1977).

3.2. Theoretical Framework

Institutional theory was adopted in this study to explain the relationship between independent and dependent variables. Since institutional pressures increase the homogeneity of company structures in an institutional environment, this theory explains the reasons companies are implementing similar business practices. In this study, the three types of institutional pressures (coercive isomorphism, normative isomorphism and mimetic isomorphism) which are considered to be the factors that influence the implementation of EMA, are believed to have a significant effect on the extent of usage of EMA.

To examine the effect of institutional pressures (coercive isomorphism, normative isomorphism and mimetic isomorphism) on the extent of usage of EMA, the theoretical framework as shown in Figure 1 was developed. Figure 1 illustrates the relationship between factors that influence the extent of usage of EMA. Coercive isomorphism, normative isomorphism and mimetic isomorphism are used as proxies for the factors influencing the implementation of EMA. Physical EMA (PEMA), monetary EMA (MEMA) and environmental management initiatives are used as proxies for the extent of usage of EMA.

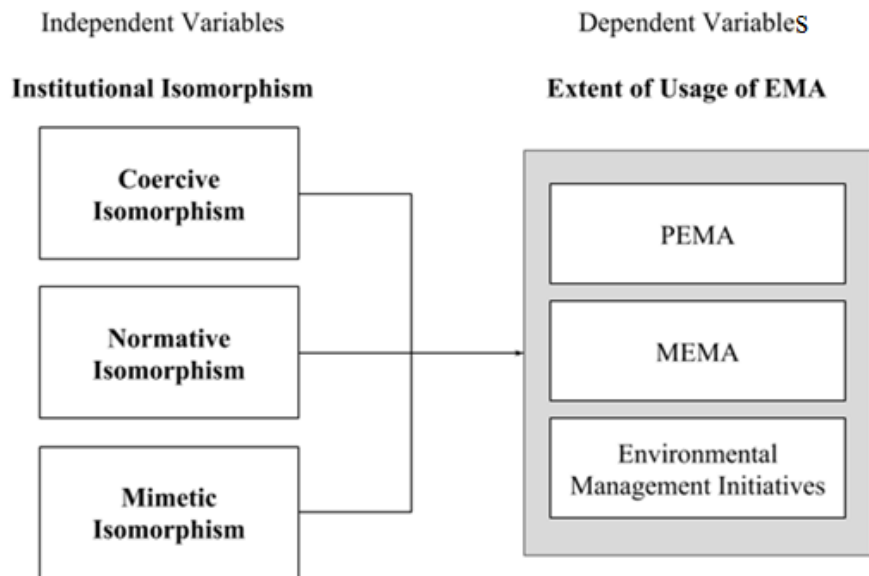


Figure-1. Theoretical framework.

Source: Agbenyo, Danquah, & Shuangshuang, (2018; Che Zuriana et al., (2015).

4. HYPOTHESES DEVELOPMENT

4.1. Coercive Isomorphism and the Extent of Usage of Environmental Management Accounting

Coercive isomorphism can derive from the influences exerted by those in powerful positions (Glover, Champion, Daniels, & Dainty, 2014) which in this study are those who have the power to influence company practices. Companies will generally be driven to adopt certain practices when there are pressures from stakeholders. In the context of environmental practices, coercive isomorphism is often related to the government and regulatory bodies (Sarkis, Gonzalez-Torre, & Adenso-Diaz, 2010) as well as shareholders (Che Zuriana et al., 2015). It has been agreed by a few scholars that coercive isomorphism affects corporate environmental behavior (Buysse & Verbeke, 2003; Kassinis & Vafeas, 2006). It was also proven that mandatory environmental regulations are the most effective tool to motivate companies to practice environmental management (Henriques & Sadorsky, 1996; Rivera, 2004; Winter & May, 2001). A study by Frias-Aceituno, Rodríguez-Ariza, and García-Sánchez (2013) was conducted to assess the influence of the legal system on the development of integrated reporting. This involved a sample of 750 international companies. They found that companies operating in civil law countries, or regions with strict law and order, were more likely to publish a broad range of integrated reports. This shows that coercive isomorphism significantly influenced the development of integrated reporting. Similarly, a study by Lin and Sheu (2012) concerning green practices also found coercive isomorphism to be the strongest effect on the implementation of green practices by manufacturing companies in the US and Taiwan. Based on prior literature, this study hence believes that coercive isomorphism will influence the extent of usage of EMA.

H1: There is a positive significant relationship between coercive isomorphism and EMA implementation in public listed companies in Malaysia.

4.2. Normative Isomorphism and the Extent of Usage of Environmental Management Accounting

Normative isomorphism can stem from professionalisation or social obligation, and “generally take the form of rules-of-thumb, standard operating procedures, occupational standards and educational curricula” (Hoffman, 1999). Professionalisation here refers to the “collective struggle of members of an occupation to define the conditions and methods of their work, to control the production of the producers and to establish a cognitive base and legitimation for their occupational autonomy” (DiMaggio & Powell, 1983). Hoffman (1999) suggested that normative isomorphism can be cultivated through gaining knowledge, which often involves formal education. Cultivated either internally or externally, it guides the employees within the organisation on how to interact with the environment (Zhu & Geng, 2013). Vitell, Paolillo, and Thomas (2003) have conducted a study to examine the influence of Hofstede’s cultural dimensions, corporate ethical values, enforcement of an ethics code and individual variables on the role of ethics and social responsibility in the overall success of a company. In their results, they revealed that cultural dimensions, an element of normative isomorphism, bring significant impact to its outcome variables. The study by Fernandez-Feijoo, Romero, and Ruiz-Blanco (2014) in assessing the effect of having at least three women on the board of directors on sustainability reporting in 22 countries concluded that cultural variables affect the level of corporate sustainability reporting (CSR) disclosure. This study thus supports that there will be a significant positive effect of normative isomorphism on the extent of usage of EMA.

H2: There is a positive significant relationship between normative isomorphism and EMA implementation in public listed companies in Malaysia.

4.3. Mimetic Isomorphism and the Extent of Usage of Environmental Management Accounting

Prior scholars have found that mimicry helps to explain company management activities (Abrahamson, 1991; Rikhardsson, Bennett, Bouma, & Schaltegger, 2005) and is a significant driver for management in developing a system which provides information for evaluating sustainability issues (Schaltegger & Burritt, 2010). The study conducted by Zhu and Geng (2013) has adopted institutional theory, which includes mimetic isomorphism as one of its variables to identify the types of drivers that will motivate extended supply chain (ESC) practices for Energy Saving and Emission Reduction (ESER) goals in Chinese manufacturers. Their study found that mimetic drivers influenced the extended supply chain (ESC) practices. A study by Cormier, Magnan, and Van Velthoven (2005) was performed to identify the determinants of corporate environmental disclosure on large companies in Germany. The results revealed evidence that imitation determines company environmental disclosure quality. Therefore, this study believes that mimetic isomorphism will positively and significantly affect the extent of usage of EMA.

H3: There is a positive significant relationship between mimetic isomorphism and EMA implementation in public listed companies in Malaysia.

5. METHODOLOGY

This study has adopted the quantitative approach in which the data collection was carried out using online questionnaires to achieve the purpose of the study. Prior studies related to environmental management used the survey questionnaire method for data collection (e.g. (Che Zuriana et al., 2015; Phan & Baird, 2015; Phan et al., 2017)) and considering its advantages, this study, therefore, selected a similar method for the same purpose. Although some prior studies used postal questionnaires, the current study used online questionnaires due to advantages which include the convenience of responding to the questionnaire (Sekaran & Bougie, 2013). The questionnaire consisted of five major sections as shown in Table 1. Five ranges were used in this study to determine the extent of usage of the EMA, which were: "1" never, "2" occasionally, "3" fairly many times, "4" often and "5" always.

Table-1. Summary of questionnaire design and variable measurement.

Section	Items	Aim	Measurement
A	Companies' Information	To gather companies' information on its type of sector, the number of employees, type of ownership and EMS certificate.	Che Zuriana et al. (2015)
B	Independent Variables		
	Coercive Isomorphism	To gather information on the factors influencing the extent of usage of environmental management accounting based on pressure from government and pressure from shareholders.	Che Zuriana et al. (2015)
	Normative Isomorphism	To gather information on the factors influencing the extent of usage of environmental management accounting based on training and budget allocation.	Che Zuriana et al. (2015) Agbenyo et al. (2018)
	Mimetic Isomorphism	To gather information on the factors influencing the extent of usage of environmental management accounting based on competitors and customers.	Che Zuriana et al. (2015)
C, D	Environmental Practices		
	Physical Environmental Management Accounting (PEMA)	To gather information on the extent of usage of environmental management accounting based on physical environmental management accounting (PEMA) practices.	Che Zuriana et al. (2015)
	Monetary Environmental Management Accounting (MEMA)	To gather information on the extent of usage of environmental management accounting based on monetary environmental management accounting (MEMA) practices.	Che Zuriana et al. (2015)
	Environmental Management Initiatives	To gather information the extent of usage of environmental management accounting based on companies' environmental management initiatives.	Che Zuriana et al. (2015)
E	Respondents' Information	To gather respondents' information regarding their gender, age, position in the company and years in current position	Che Zuriana et al. (2015)

The questionnaire was pilot-tested on 30 respondents over a period of one week. The respondents were selected based on convenience sampling from personnel involved in EMA or management accounting in industry. The reliability test revealed that the internal consistency of each variable was excellent.

Since this study looks into the main factors that influence the extent of EMA implementation in Malaysian public listed companies, the unit of analysis used was at an organisational level. Based on Bursa Malaysia (2017) there are 802 public listed companies in the Main Market. Of these companies, 28 are certified with ISO 14001, and registered in the SIRIM QAS directory. Since the certification prescribes the environmental management system framework for companies that are certified with it, they are most likely to be actively involved in environmental practices (Ann, Zailani, & Wahid, 2006; Ismail, Ramli, & Darus, 2014). Thus, this study has excluded these 28 companies, which then left 774 companies as the total population. When dealing with EMA, this study viewed any key personnel involved in EMA or management accounting as the most suitable participants to respond to the questionnaire on behalf of their organisations. This could include the chief executive officer (CEO)/ managing directors, chief financial officers (CFO)/ finance managers or chief operating officers (COO)/ production managers of the companies. Since these individuals are responsible for overseeing their company operations and making strategic decisions for the companies' survival (Lefebvre & Lefebvre, 2003) they seemed to be the most suitable respondents to participate in the survey.

Online questionnaires were administered to the target population. In order to collect the responses, the survey was administered using Google Form, which is a web-based survey tool, via the following link <https://goo.gl/forms/IjnmHK39v1jI7Fc22>. The questionnaires were released over three periods, in which the second and third periods were reminders for the respondents to participate in the survey. After two follow-ups, in total there were 67 responses received with only 51 that were usable in this study. Hence, the usable response rate in this study was 21.98% (51/232) of the sample size. Data collected were analysed descriptively and inferentially using Statistical Packages for Social Science (SPSS) version 23. There were no reliability and validity issues and data were normally distributed.

6. RESULTS AND DISCUSSION

6.1. Extent of Usage of Environmental Management Accounting

Table 2 presents the descriptive statistics for the extent of usage of EMA. Overall, it can be concluded that Malaysian public listed companies have implemented EMA to a great extent ($M = 4.34$, $SD = .710$). This can be further supported by analysing each of the elements of the extent of usage of the EMA (physical EMA, monetary EMA and environmental management initiatives), presented in the following subsections:

Table-2. Descriptive statistics – extent of usage of environmental management accounting.

Extent of Usage of EMA	N	Minimum	Maximum	Mean	Std. Deviation
Overall Average for The Extent of Usage of Environmental Management Accounting	51	3.20	5.00	4.34	.710

Table 3 indicates that the mean for physical EMA usage was 2.93 ($SD = .613$). This shows that the companies have used physical EMA fairly many times. Additionally, the results reveal that most of the physical EMA items are rated with a mean value between 2.76 and 3.12.

Table-3. Descriptive statistics – physical environmental management accounting (PEMA).

PEMA	N	Minimum	Maximum	Mean	Std. Deviation
Material flow assessment	51	1	5	3.04	.937
Energy flow assessment	51	1	5	2.84	.784
Environmental capital impact assessment	51	1	4	2.84	.703
Post assessment of short-term environmental impact	51	2	4	2.92	.744
Lifecycle inventories	51	2	4	3.12	.791
Post investment assessment of physical environmental investment appraisal	51	2	4	2.88	.739
Physical environmental budgeting	51	2	4	2.76	.737
Long term physical environmental planning	51	2	4	2.80	.693
Relevant environmental impacts	51	2	4	3.04	.774
Physical environmental investment appraisal	51	2	4	2.82	.713
Lifecycle analysis	51	2	4	3.08	.659
Overall Average for Physical Environmental Management Accounting	51	1.91	4.18	2.923	.613

Table 4 indicates that on average, the mean for monetary EMA usage is 2.97 ($SD = .592$). This shows that sample companies in the service sector have used monetary EMA, fairly many times. Additionally the results reveal that most of the monetary EMA items are rated with a mean value between 2.90 and 3.04.

Table-4. Descriptive statistics – monetary environmental management accounting (MEMA).

MEMA	N	Minimum	Maximum	Mean	Std. Deviation
Environmental cost accounting	51	2	4	2.94	.705
Environmentally induced capital expenditure and revenue	51	2	4	2.98	.707
Post assessment of relevant environmental costing decisions	51	2	4	2.96	.799
Environmental lifecycle costing	51	2	4	3.00	.748
Environmental target costing	51	2	4	2.90	.700
Post investment of individual environmental projects	51	2	5	3.04	.720
Monetary environmental operational budgeting	51	2	4	2.98	.735
Monetary environmental capital budgeting	51	2	4	2.90	.755
Environmental long-term financial planning	51	2	4	2.96	.720
Relevant environmental costing	51	2	4	2.98	.678
Monetary environmental project investment appraisal	51	2	4	2.94	.676
Environmental lifecycle budgeting	51	2	4	2.98	.648
Environmental lifecycle target pricing	51	2	4	3.04	.720
Overall Average for Physical Environmental Management Accounting	51	2	4	2.97	.592

6.2. Organisational Isomorphism and Extent of Usage of Environmental Management Accounting

Multiple regression analysis was conducted in this study to test the hypotheses that were previously developed. The analysis was conducted based on the following model:

$$\text{ExtUsg} = \beta_0 + \beta_1\text{CI} + \beta_2\text{NI} + \beta_3\text{MI} + \xi$$

Where:

ExtUsg	Extent of usage of EMA.
CI	Coercive isomorphism.
NI	Normative isomorphism.
MI	Mimetic isomorphism.
β_0	Slope of n independent variable.
ξ	Error term for the relationship.

The regression model was constructed to test H1, H2 and H3, which are the hypotheses developed to test the relationship between coercive isomorphism (CI), normative isomorphism (NI) and mimetic isomorphism (MI), respectively and the extent of usage of EMA (ExtUsg).

Table 5 presents the results for multiple regression analysis based on 51 responses. Overall, the regression model is significant with Adjusted R-squared of .212, $F(3,47) = 5.495$, $p = .003$. The result suggests that 21.2% of the variation on the extent of usage of EMA (ExtUsg) can be explained by the variation in coercive isomorphism (CI), normative isomorphism (NI) and mimetic isomorphism (MI). Since the F-value is significant, it can be summarised that the overall model fits. The Adjusted R-squared also supported the fit of the model since it encompasses the model's degree of freedom to prevent the pitfall in R-squared which might increase when the predictors did not improve the model's fit (Martin, 2012).

As described earlier, the multiple regression analysis model was constructed to test H1, H2 and H3. H1 predicts that there is a significant positive relationship between coercive isomorphism and the extent of usage of EMA. The results revealed that coercive isomorphism is found to significantly affect the extent of usage of the EMA at 1% significant level ($b = .453$, $t(47) = 3.486$, $p = .001$). This indicates that greater pressure from coercive isomorphism will increase the extent of usage of EMA by 45.3%. Since coercive isomorphism significantly and positively affects the extent of usage of EMA, H1 can, therefore, be accepted.

H2 predicts that there is a significant positive relationship between normative isomorphism and the extent of usage of EMA. Table 5 reveals that normative isomorphism does not significantly affect the extent of usage of EMA ($b = .156$, $t(47) = 1.232$, $p = .224$). Therefore, it can be surmised that normative isomorphism does not significantly affect the extent of usage of EMA. Hence, H2 is rejected.

Table 5 also shows that mimetic isomorphism does not significantly affect the extent of usage of EMA ($b = .127$, $t(47) = .980$, $p = .332$). Since the results reveal that there is no significant relationship between mimetic isomorphism and the extent of usage of EMA, H3 is rejected.

Table-5. Multiple regression analysis model.

Model	Beta	t	Sig.
1 (Constant)		-.302	.764
CI	.453	3.486	.001
NI	.156	1.232	.224
MI	.127	.980	.332
R ²	.260		
Adj. R ²	.212		
F – Statistics (Sig)	5.495 (.003)		
Df	(3,47)		
N	51		

Note: a. Dependent Variable: ExtUsg

It was found that most of the companies agreed that they have implemented EMA to a great extent. The results also indicated that Malaysian public listed companies have used the physical EMA (PEMA) fairly many times. This is similar to the monetary EMA (MEMA), where the companies have used such practices fairly many times. Based on the environmental management initiatives of the respondents, they agreed that their companies have implemented EMA. The extent of usage of EMA could result from various factors, including coercive isomorphism, normative isomorphism and mimetic isomorphism (Che Zuriana et al., 2015; DiMaggio & Powell, 1983; Phan & Baird, 2015). However, most of them agreed that coercive isomorphism is associated with the extent of usage of the EMA in their companies, which in this study has included pressure from both the government and shareholders as its measurement. This is in line with the studies by Che Zuriana et al. (2015) and Phan and Baird (2015) which found coercive isomorphism to be highly associated with the implementation of EMA. The results from the analyses indicated that coercive isomorphism positively and significantly influenced the extent of usage of EMA of Malaysian public listed companies. This suggests that companies will implement environmental-related practices with the existence of coercive pressures, derived from the government and shareholders. Similarly, the study conducted by Che Zuriana et al. (2015) and Phan and Baird (2015) also found a significant relationship between coercive isomorphism and environmental management practices.

7. CONCLUDING REMARKS

The results also revealed that Malaysian public listed companies have implemented EMA to a great extent. This can be further supported based on the results from the descriptive data analysis of the extent of usage of the EMA, which comprise physical EMA, monetary EMA and environmental management initiatives. The descriptive results prove that Malaysian public listed companies have used physical EMA and monetary EMA quite frequently. They also agreed that they have implemented EMA based on environmental management initiatives. The results from the analyses indicate that coercive isomorphism positively and significantly influence the extent of usage of EMA of Malaysian public listed companies, which is consistent with the findings from the study conducted by Che Zuriana et al. (2015) and Phan and Baird (2015). This suggests that companies will implement environmentally-related practices with the existence of coercive pressures, derived from the government and shareholders. Supporting the study by Delmas and Toffel (2004) this study also believes that government is the most obvious influencer for companies to adopt environmental practices.

The findings from this study have contributed in several ways; practice, literature and theory and methodology. The results of this study help to assist the government in an effort towards encouraging EMA practices within Malaysian public listed companies. This study also found that pressure from the government is the most effective way for Malaysian public listed companies to implement EMA practices, compared to pressure from shareholders, the provision of environmental training, environmental budget allocation or imitating competitors and customers. A review of the literature shows that there are still inconclusive results on the factors influencing the implementation of EMA. Thus, this study provides further empirical evidence on the influential factors of EMA. This study found that coercive isomorphism had a significant influence on the extent of EMA practices in Malaysian public listed companies. The finding of this study further supported prior research in the field of EMA conducted by Che Zuriana et al. (2015) and Phan and Baird (2015). Järvenpää and Lämsiluoto (2016) encouraged future research to include more internal and external factors of institutional theory to explain company EMA practices. To fill this gap, this study has adopted institutional theory, using different variables that were used by Järvenpää and Lämsiluoto (2016) and has incorporated more internal and external factors. For example, this study used the elements of shareholders, training and budget as internal factors and government, competitors and customers as external factors. This study has also contributed to the methodology by addressing the research gap provided by Qian, Burritt, and Chen (2015). They indicated that most discussions about EMA are predominantly conceptual. Conceptual papers focus on “integration and proposing new relationships among constructs” and do not have data (Goldberg & Gilson, 2016). Hence, the focus is on “developing logical and complete arguments for associations rather than testing them empirically” (Goldberg & Gilson, 2016). The issue of having limited empirical studies on environmental management accounting put forth by Phan and Baird (2015) has thus also been addressed

in the present study. They pointed out that the few existing empirical studies are limited to the manufacturing industry in the Western nations.

The low response rate may be insufficient to represent the whole population as this might also affect the statistical power of the analysis conducted. Thus, this limitation itself provides an avenue for future study in this area. Additional proxies can be included to represent each variable and to better explain the implementation of environmental practices. Future studies could test the proxies for the variables separately. Besides, future studies could also test the proxies in different settings, such as focusing on private companies or specific sectors.

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