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Antecedents of Environmental Management Accounting and Environmental Performance: Evidence from Indonesian Small and Medium Enterprises

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ABSTRACT

Small and medium enterprises (SMEs) play a significant role in Indonesian business growth. Therefore, the objective of the present study is to investigate the association of antecedents of environmental management accounting and environmental performance in Indonesian SMEs. In doing so, the current study seeks to identify the internal and external influencing factors for firms in adopting EMA and its subsequent impact on SMEs environmental performance. The outcomes of the PLS-SEM confirm that benefit expectation has significantly and positively impacted on Environmental Management Accounting. The results of PLS-SEM also confirm that Regulatory Pressure has a positive and significant impact on environmental management accounting. Finally, the results of partial least square modelling confirm that environmental management accounting also has a positive and significant impact on environmental performance.

Keywords: Environmental Management Accounting, Environmental Performance, Small and Medium Enterprises, Indonesia
JEL Classifications: Q55, Q50

1. INTRODUCTION

Climate change has been the most concerning factor for today's economy. It does hinder not only future business growth but also threatens economic and human survival in the long term. Organizations, both big and small have contributed massively to ecological deterioration in the form of excessive energy use and enhancing air, land and water pollution (Sanz-Menéndez and Cruz-Castro, 2003). This led to exert several adverse effects on the atmosphere in the form of emitting greenhouse gases and harming ozone (Hendriks et al., 1998). In addition, the continuous decline in forestry, marine life, and depletion of natural resources are also among the negative consequences of augmented industrial activities and corporate growth. Given the significance of rising

environmental pressures in disrupting environmental conditions, countries and economies are thriving to ensure environmental sustainability into business methods and processes (Christmann and Taylor, 2001).

Hence, the notion of sustainability is on the rise in contemporary business practices (Chen, 2016). By definition, sustainability requires organizations to maintain the monetary objectives and growth of the firms but without undermining the social and ecological consciousness (Hall and Vredenburg, 2003; Moon, 2007). In compliance to enhanced international burden to respond the objectives of sustainable development, several modern enterprises have started to pay prime focus on ecologically driven organizational methods (Brønn and Vidaver-Cohen, 2009; Hall and Vredenburg, 2003). In this regard, numerous studies have

examined the influencing features for supporting eco-friendly firm's practices, the inspiration behind societal programs and the way such practices are transformed with organizational objectives of improved competitiveness (Amran and Siti-Nabiha, 2009; Patrícia et al., 2010). Thus, observing the significance of environmental management in enhancing a firm's reputation, several investigations linked the firm's ecologically driven practices with customer satisfaction and improved competitive advantage. In a few circumstances, it is believed that firms also consider societal and ecological initiatives as an efficient tool for enhancing a firm's performance (Martín-de Castro et al., 2016).

There as certain factors that motivate organizations for implementing eco-friendly innovations and business methods to ensure performance. In the field of accounting, Environmental management accounting is proved as a useful tool of firm's identification of trends, data, and methods that can influence a firm's impact on the environment. The objectives of EMA includes attaining informational efficiency required to make informed decisions and thus curtail firm's environmental costs. However, there exist many internal and external factors behind the firm's implementation of EMA tools. Utilizing the theoretical base of Resource-Based View (Russo and Fouts, 1997) along with Institutional theory (Marquis et al., 2007), the current examination intends to recognize the drivers of environmental accounting systems in firms.

The fundamentals of institutional theory consider external factors as the vital force of driving a firm's performance. In this regard, the theory identifies certain external features that influence an organization's practices and methods (Campbell, 2006; Chan and Makino, 2007). In this regard, the role of environmental regulations is crucial for generating demand for ecologically driven environmental practices in firms. Augmented levels of environmental legislation not only benefit firms domestic processing but helps to build organizations improved image in the international market. In a similar context, the motivation for ensuring transparency in environmental accounting to identify accurate environmental cost and improved environmental management drives efficient organizational utilization of EMA.

On the other hand, the notion of RBV believes that firms' internal resources and motivations are crucial in driving organizational competence that posits positive influence on performance (Famiola and Wulansari, 2018). Hence, the internal motivation can be strategized to strengthen the firm's innovative capacity to utilize EMA for enhancing competitive advantages of the firm efficiently. These involve benefit expectation that helps firms to enhance financial benefits along with market benefits in terms of improved image and reputation. Expected benefits of the company are utilized in many studies to assess the motivating factors behind the company's environmental management in this regard, distributed expected benefits into two categories, i.e., Soft and hard benefit expectation. The soft benefit expectations are defined by an organization's urge for improving brands, reputation, image, and competitive advantages. On the other hand, hard benefit analyzed organizations desire to augmented profitability and cost reduction. These benefits correspond to the objective of EMA and thus assist

in complementing usefulness of EMA for sustainable development and improved organizational performance.

Considering the importance of sustainability, many small, medium and large organizations are keen to adopt environmental management as the wise tool of fulfilling organizations' environmental responsibility. Small and medium enterprises (SMEs) play a significant role in Indonesian business growth. The number of SMEs in Indonesia totaled around 57.9 million that constitute 99 percent of all businesses in Indonesia (Suyono et al., 2018). Many studies established that SMEs all around the World are liable for generating seventy percent of industrial pollution (Agan et al., 2013; Hillary, 1995). As the major part of Indonesia, businesses are comprised of SMEs; they are considered a great threat to spreading environmental degradation. However, considering the importance of SMEs in shaping economic growth, as well as environmental pollution, the research on SMEs are limited in terms of the due attention they should be given.

Therefore, the objective of the present study is to investigate the association of antecedents of environmental management accounting and environmental performance in Indonesian SMEs. In doing so, the current study seeks to identify the internal and external influencing factors for firms in adopting EMA and its subsequent impact on SMEs environmental performance. Particularly, the authors of the current study intended to recognize the potentials of benefit expectations and environmental regulations in driving EMA implementation in SMEs. Furthermore, the study also aims to test the empirical significance of EMA in ensuring firm environmental performance. The outcomes of the study are expected to strengthen organizational practice by identifying the features of SMEs' drive for sustainability and thus helps government, society and also the SMEs themselves.

After section one, the later chapter of the investigation presents a literature review and identified existing studies regarding environmental management, accounting and performance nexus. Next, in section three, the utilized methods of the study are discussed. Section four of the investigation reported empirical findings and section five presents the study conclusion and future recommendations.

2. LITERATURE REVIEW

The current examination as discussed earlier has integrated the concepts of two vital management theories. The external driver of environmental regulation in determining the firm's efficient utilization of EMA to enhance firm performance is utilized from the concepts of institutional theory (Campbell, 2006; Chan and Makino, 2007). On the other hand, the internal environmental drivers of soft and hard expected benefits to influence EMA and performance are taken from the theoretical foundations of resource-based theory (Famiola and Wulansari, 2018).

Many studies have examined role EMA in enhancing firms' environmental performance. Among them, Latan et al. (2018) analyzed the association between ecologically driven firm's management and performance. In specific, the authors investigated

the role of environmental uncertainty, ecological strategies and managerial commitment in driving EMA. Furthermore, the result also tested the association of EMA with firm performance (Umrani et al., 2016). The results of the examination found the significant relationship of external uncertainty, managerial commitment and ecological strategies in driving EMA practices. Moreover, the authors concluded that EMA exerted a significant positive impact on the Firm's environmental performance.

In another study, Saeidi et al. (2011) analyzed the connotation between environmentally determined management, innovation, competencies, and performance. In specific, the authors investigated the existing literature on the critical link of environmental accounting on organizational growth. The outcomes of the inspection presented the conceptual framework which is vital for analyzing the crucial association between environmental accounting and performance nexus. The authors signified that important role of EMA on firm' innovation, competitiveness, and organizational performance. Furthermore, the investigation also proposed the vital association of innovation and competitive advantage in driving firm performance.

Focusing on the attribute of environmental accounting through eco-control, analyzed how a firm's adoption of eco-controls is linked to the economic and environmental performance of the organizations. In specific, the authors tested the direct effects of eco-control on a firm's economic performance. In addition, the study also examined the indirect link of eco-control from environmental performance to economic performance. The outcomes of the investigation reported that eco-control have no significant direct link in driving the firm's economic performance. On the other hand, the indirect impact of eco-control on economic performance is found significant through improvement in environmental performance in the form of enhanced ecological exposure, customer visibility, ecological consciousness and stakeholders' interest for sustainability.

There exist many studies that examined the numerous drivers or motivators for adopting ecologically driven accounting methods, environmental management, and eco-innovations to improve the firm's environmental and economic performance. Such investigations included the studies of Figge and Hahn (2013), Razumova et al. (2015), Vishwakarma et al. (2018), Wagner (2007).

In this regard, Agan et al. (2013) studied numerous determinants of Firm's ecological methods and their association with firm performance. In doing so, the authors analyzed the data of Turkish SMEs by observing the responses of 500 employees. In specific, the study tested the relationship of environmental regulations, expected benefits, moral and social responsibility and firm's customers with environmental management systems (EMS) and numerous environmental practices (Jermsittiparsert, 2016; Moussa, 2018). Further, the study also examined the impact of ecologically driven practices and EMS on firm performance. The results of the analysis found that expected benefits, in the form of soft and hard benefits, brought significant positive effect on EMS and eco-practices. Finally, the results concluded the significant

positive impact of eco-treatment, eco-design, and EMS on firm performance.

In another study, Simpson et al. (2004) also analyzed the relationship between sustainable organizational practices and the firm's competitiveness. Using the data of SMEs, the findings of the analysis reported the significance of several benefits in the firm's motivation for adopting environmental management. In particular, the study identified that cost reduction, improves consumer delight, enhanced business reputation and augmented levels of profits are the crucial drivers of the firm's implementation of ecologically driven methods. Likewise, Morrow and Rondinelli (2002), while studying drivers of environmental management systems (EMS), also found the significant role of expected benefits in motivating firms' adoption of EMS. In specific, the results by applying case study approach found that improved documentation, enhanced lawful certainty, better image, employee's satisfaction and reduction in resource dependence are the most common motivators of EMS adoption in local and multinational organizations.

Similarly, given the importance of environmental legislation, Rennings and Rammer (2011) analyzed the impact of regulation driven eco-innovation and organizational performance. The outcomes of the investigation established that environmental guidelines regarding green mobility played a significant part in enhancing firm sales. On the other hand, regulation supported process innovation helped to decline organizational cost and improved profitability (Jermsittiparsert et al., 2019). Moreover, examining the nexus between innovation, regulation, and performance, Doran and Ryan (2012) also studied the impact of environmental legislation on the firm's ability to innovate. Furthermore, the authors also tested the association of eco-innovation in influencing firm performance. The outcomes of the analysis reported the significant positive link of environmental regulations with firm adoption of ecological innovations. Lastly, the results also supported the presence of a positive relationship between environmental innovations and firm performance.

Hence, in light of the above literature, the current examination seeks to test the following hypotheses;

H_1 - Benefit expectations are significant to impact the firm's adoption of environmental management accounting

H_2 - Regulatory pressures are significant to impact the firm's adoption of environmental management accounting

H_3 - Environmental management accounting is significant to impact firm's environmental performance

The Figure 1 displaying the conceptual model of the current examination is shown below.

3. METHODOLOGY

The present examination explores the determinants of environmental management accounting and firm performance in small and medium-sized enterprises in Indonesia. Furthermore, in the current study, we use two main antecedents which are benefit expectation and regulatory pressure. Benefit expectation is further divided into two sub-categories which are hard benefit expectation and soft

Figure 1: Conceptual model
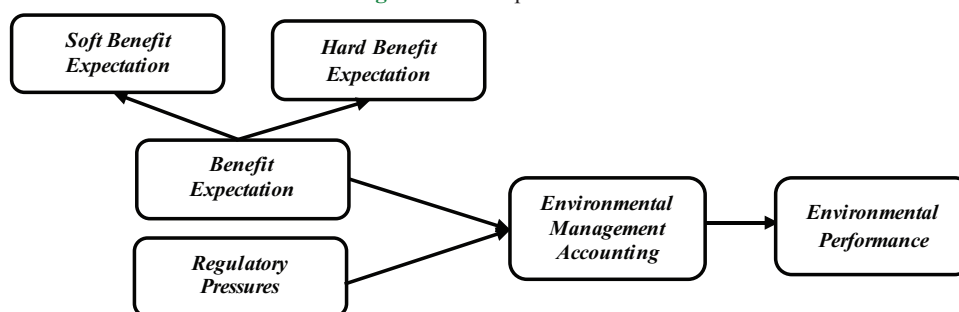
benefit expectation. To accomplish this objective, the present study established a model which is based on earlier research literature, and the model is shown in Figure 1. The fundamental properties of the factors are defined by using the Likert scale strategy from 5 (strongly agree) to 1 (strongly disagree). In general, the present examination utilizes five factors. The factors utilized in this investigation are the soft benefit expectation (SBE), hard benefit expectation (HBE), regulatory pressure (RPR), environmental management accounting (EMA) and environmental performance (EPR). The variables of soft and hard benefit expectation will make a higher order variable with the name of benefit expectation (BEX). Also, the items of these factors are also embraced from past examinations. The four things of (SBE) and (HBE) are taken from the before the investigation of Agan et al. (2013). Besides, the four things of (RPR) are likewise taken from the earlier research of Agan et al. (2013). Besides, the four things of (EMA) are taken from the past research of Lantan et al. (2018). Finally, the four items of (EPR) utilized in this examination are taken from the past investigation of Zhu et al. (2017).

On the other hand, the method for data accumulation in the present examination is done by gathering the information from the SMEs of Indonesia. Likewise, we select 136 different SMEs of Indonesia. For a quick and smooth data gathering process, we make an understanding of our survey questionnaire into the English language and send to the chose distinctive SMEs. Finally, a sum of 279 sample data was assembled to utilizing both printed and soft media. The technique for information gathering took a time of 27 weeks and assembled 257 sample data with the reaction rate of 95.55%.

4. DATA ANALYSIS AND INTERPRETATION

In the present research, the sample analysis is finished by utilizing two renowned statistical programming software which is the SmartPLS Version 3.2.8 (Ringle et al., 2015) and Statistical Package for Social Sciences (Version-23). The final data taken for the present examination is 249 resulting in taking out univariate and multivariate outliers. The methodology for the seeing of univariate and multivariate special cases are Z-test score and Mahalanobis Distance (D2) by utilizing SPSS (V-23), and further data analysis is done by applying SmartPLS. Indicated Table 1 is the composition and structure of the valid gathered data used in this examination. Moreover, Table 2 detailed the mean and Pearson's correlation of the segments used in the present examination. Likewise, to manage the issue of multicollinearity, we follow Hair et al. (2013) explained

Table 1: Descriptive statistics

Valid	Frequency	Percent (%)
Gender		
Female	85	34
Male	164	66
Total	249	100
Age		
20-30 years	33	13
31-40 years	153	61
41-50 years	35	14
51 and above	28	11
Total	249	100
Working experience		
1-5 years	34	14
6-10 years	155	62
11-15 years	27	11
More than 15 years	33	13
Total	249	100
Education		
Undergraduate	28	11
Graduate	159	64
Post graduate	25	10
Others	37	15
Total	249	100

Source: Authors estimation

Table 2: Means and Pearson correlations

Variables	Mean	SBE	HBE	EMA	RPR	EPR
SBE	3.993	-				
HBE	3.586	0.338**	-			
EMA	4.235	0.442**	0.338**	-		
RPR	4.093	0.303**	0.317**	0.401**	-	
EPR	3.893	0.312**	0.385**	0.344**	0.482**	-

N=249. **Correlation is significant at the 0.01 level (2-tailed)

that by a wide range in Pearson's Correlation examination ought to underneath 0.90. Along these lines, affirm the nonappearance of multicollinearity among the factors (Hair et al., 2013; Frooghi et al., 2015; Mansoor and Sultana, 2018).

The results of descriptive statistics are reported in Table 1 with complete structure and composition of the collected data. The descriptive statistics are further divided into four different sub-categories which are gender, age, work experience, and education. Table 1 explains the percentage decomposition of all the sub-categories.

Furthermore, content authenticity is developed if the items utilizing in the information analysis load with high values in

their particular factor in comparison with the items showed up in the model, while inner consistency is recognized whether the estimation of Cronbach's alpha and composite reliability value found more discernible than 0.7 (Hair et al., 2013; Waseem et al., 2013). Factor loadings and composite reliability value appear in Table 3 which show that a smooth estimation of the items factor loadings more clear than 0.7. Moreover, these loadings show up in their individual parts which guaranteeing the internal consistency of the selected construct.

Besides, convergent authenticity discloses to what degree an item with respect to a particular factor loaded to different components where they expected to be loaded (Mehmood and Najmi, 2017; Meutia et al., 2018). In this examination, convergent authenticity is shown by utilizing an average variance extracted (AVE) for each factor (Fornell and Larcker, 1981; Muhammad and Dolgopolova 2011). They provided the benchmark of more crucial than and presented diversely in relationship with 0.5 for guaranteeing the convergent authenticity. The results of AVE in Table 3 is ensuring the basic parameters.

In the further stage, discriminant authenticity is uncovered as how much a thing of a factor is discriminant and novel from different factors utilized in a model (Frooghi et al., 2015; Mose, 2017). As demonstrated by Fornell and Larcker (1981), the discriminant authenticity is said to be established if the AVE square root value is more than the pair-wise relationship of the latent factor (unobserved variable). The outcomes showed up in Table 4, bold and italic values are the square root of AVE which is more than the off-inclining value which is the pair-wise relationship of each factor. Moreover, Table 5 demonstrates the factor loadings of other and individual factor, in like way, articulating the cut-off benchmark. Therefore, the discriminant authenticity is also confirmed if the Hetro Trait and Mono Trait parameter are lower than 0.85 as proposed by Henseler et al. (2015). The results in Table 6 revealed that all variables have discriminant legitimacy.

In the last stage, we related a partial least square framework to inquire about the model structure and theory testing which demonstrating path coefficients, t-stats, and probability value. As appeared by Chin (1998) suggestion, a bootstrapping framework using 1000 sub-test was connected with affirming the quantifiable key assessment of the considerable number of values. Table 7 reveals beta coefficients, t-stats, and their significant essential value with the comments about the hypothesis testing.

The outcomes of the partial least square structural equation modelling are shown in Table 7. It confirmed that the outcomes with regression path coefficient, t-statistics, probability values (P-values) and the remarks related to the hypothesis testing. Generally, the outcome confirms that all selected variables (benefit expectation and regulatory pressure) have a positive and significant impact on environmental management accounting in the small and medium enterprises in Indonesia. Furthermore, EMA also has a positive and significant impact on environmental performance. Generally, the outcomes of the PLS-SEM confirm that benefit expectation ($\beta = 0.392$, $P < 0.000$) have significantly

Table 3: Measurement model results

Variable	Factor loadings	Cronbach's alpha	Composite reliability	AVE
Soft benefit expectation				
SBE1	0.843	0.958	0.885	0.611
SBE2	0.814			
SBE3	0.858			
SBE4	0.877			
Hard benefit expectation				
HBE1	0.823	0.928	0.875	0.602
HBE2	0.790			
HBE3	0.800			
HBE4	0.794			
Regulatory pressures				
RPR1	0.796	0.944	0.884	0.592
RPR2	0.776			
RPR3	0.827			
RPR4	0.749			
Environmental management accounting				
EMA1	0.807	0.892	0.802	0.614
EMA2	0.767			
EMA3	0.722			
EMA4	0.767			
Environmental performance				
EPR1	0.785	0.884	0.832	0.608
EPR3	0.777			
EPR3	0.750			
EPR4	0.731			

Source: Authors estimation

Table 4: Discriminant validity Fornell-Larcker criterion

	SBE	HBE	EMA	RPR	EPR
SBE	0.782				
HBE	0.402	0.776			
EMA	0.338	0.290	0.769		
RPR	0.413	0.422	0.285	0.784	
EPR	0.374	0.331	0.339	0.195	0.780

Source: Authors estimation

Table 5: Results of loadings and cross loadings

Variable	SBE	HBE	RPR	EMA	EPR
Soft benefit expectation	0.843	0.161	0.224	0.109	0.228
	0.814	0.263	0.171	0.159	0.193
	0.858	0.067	0.125	0.144	0.216
	0.877	0.222	0.215	0.172	0.235
Hard benefit expectation	0.125	0.823	0.292	0.134	0.177
	0.109	0.790	0.177	0.273	0.150
	0.067	0.800	0.129	0.239	0.168
	0.163	0.794	0.147	0.178	0.217
Regulatory pressures	0.148	0.172	0.796	0.137	0.190
	0.233	0.110	0.776	0.150	0.244
	0.115	0.110	0.827	0.138	0.214
	0.214	0.263	0.749	0.096	0.186
Environmental management accounting	0.223	0.185	0.115	0.807	0.194
	0.155	0.235	0.232	0.767	0.274
	0.175	0.286	0.216	0.722	0.194
	0.095	0.214	0.179	0.767	0.167
Environmental performance	0.240	0.143	0.121	0.166	0.785
	0.172	0.116	0.176	0.206	0.777
	0.201	0.171	0.264	0.191	0.750
	0.194	0.269	0.125	0.218	0.731

Source: Authors estimation

Table 6: Results of HTMT ratio of correlations

	SBE	HBE	EMA	RPR	EPR
SBE					
HBE	0.683				
EMA	0.403	0.615			
RPR	0.388	0.583	0.593		
EPR	0.402	0.493	0.395	0.624	

Source: Authors estimation

Table 7: Results of path coefficients

Hypothesized path	Path coefficient	C.R	P-value	Remarks
EMA←BEX	0.392	5.483	0.000	Supported
EMA←RPR	0.302	4.448	0.000	Supported
EPR←EMA	0.332	4.284	0.000	Supported

Source: Authors' estimation. Level of significance (5% i.e.,, 0.050)

and positively impacted on environmental management Accounting hence affirming H_1. The results of PLS-SEM also confirm that regulatory pressure ($\beta = 0.302$, $P < 0.000$) have a positive and significant impact on environmental management accounting, therefore, confirming H_2. Finally, the results of partial least square modelling confirm that environmental management accounting ($\beta = 0.332$, $P < 0.000$) also have a positive and significant impact on environmental performance; hence, confirming H_3. Technical speaking, the results confirm that benefit expectation, regulatory pressure and environmental management accounting are the positive and significant contributors in enhancing the environmental performance of small and medium enterprises in Indonesia. The results further suggested that the adoption of more effective and efficient environmental management accounting system ultimately help to improve the environmental performance in Indonesia.

5. CONCLUSION AND DISCUSSION

An environmental shift has been the most concerning factor for today's economy. It does hinder not only future business growth but also threatens economic and human survival in the long term. Organizations, both big and small have contributed massively to ecological deterioration in the form of excessive energy use and enhancing air, land and water pollution. This led to exert several adverse effects on the atmosphere in the form of emitting greenhouse gases and harming the ozone. In compliance with enhanced international burden to respond to the objectives of sustainable development, several modern enterprises have started to pay prime focus on ecologically driven organizational methods. The fundamentals of institutional theory consider external factors as the vital force of driving a firm's performance. In this regard, the theory identifies certain external features that influence an organization's practices and methods. In this regard, the role of environmental regulations is crucial for generating demand for ecologically driven environmental practices in firms. Augmented levels of environmental legislation not only benefit firms domestic processing but helps to build organizations improved image in the international market. In a similar context, the motivation for ensuring transparency in environmental accounting to identify accurate environmental cost and improved environmental management drives efficient organizational utilization of EMA.

Considering the importance of sustainability, many small, medium and large organizations are keen to adopt environmental management as the wise tool of fulfilling organizations' environmental responsibility. Small and medium enterprises (SMEs) play a significant role in Indonesian business growth. Therefore, the objective of the present study is to investigate the association of antecedents of environmental management accounting and environmental performance in Indonesian SMEs. In doing so, the current study seeks to identify the internal and external influencing factors for firms in adopting EMA and its subsequent impact on SMEs environmental performance. The outcomes of the PLS-SEM confirm that benefit expectation has significantly and positively impacted on environmental management accounting. The results of PLS-SEM also confirm that regulatory pressure has a positive and significant impact on environmental management accounting. Finally, the results of partial least square modelling confirm that environmental management accounting also has a positive and significant impact on environmental performance.

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