Environmental Management Accounting Practice Contributing to Organization Sustainability among ISO 14001 Certified Listed Companies of SET

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Abstract
This study aimed at studying Environmental Management Accounting Practice (EAP) contributing to Organization Sustainability (OST) among ISO 14001 certified listed companies of the Stock Exchange of Thailand (SET). 200 pieces of questionnairewere used for data collection and Multiple Indicators and Multiple Causes (MIMIC) Model was adopted for data analysis. The results pointed out the congruence of model and empirical evidence with Chi-square = 11.68, p = 0.90, def = 19, $\chi 2$ /df = 0.61, RMSEA = 0.00, SRMR = 0.02, GFI = 0.99, CFI = 1.00, and AGFI = 0.96. It was also found that EAP and Competitive Advantage in Finance (CAF) showed a positive direct effect towards OST, at the significance level of 0.01 witheffect values of 0.09** and 0.94**, respectively.
Keywords: Environmental Practice, Organization, Sustainability

Importance of Environmental Management Accounting Practice Contributing to Sustainability

The environmental accounting is a revolutionized accounting developed by modern accountants in order to handle with environmental issues affecting business. The concept of natural and environmental preservation has been implemented to the principle of current accountingpractice. Thus, the environmental accountingis an attempt to measure the organizational assessment and performance by identifying incomes and expenses relative to environmental issues, recognition, cost, and environmental debt, and presenting environmental issues in thefinancial budget of previous accounting system in forms of newer versionsdeveloped by accounting information system for administrators. The developed system could assist in economic decision-making process relative to environmental issues and disclose information to general public on activities or issues affecting environment responsible by the organization (Srichanphet, 2009). As supported by Murray et al. (2006), financial marketing behavior influencing social and environmental information disclosure was underlined by the fact that information disclosure relative to social and environmental issues of organization could make the best opportunity in international investment due to the environmental impact to business. It could therefore be said that environmental accounting is relatively significant and recognition of EAPcould be a branch of accounting relative to environmental issues (Schaltegger & Burritt, 2000). In general, environmental accounting could be subcategorized into two aspects including (1) Environmental Management Accounting (EMA), and (2) Environmental Financial Accounting (EFA). EMA contained environmental data in terms of finance and physical characteristics by identifying trends and analysis for further decision-making process (Burritt et al., 2002).

The core concept of environmental accounting was to identify processes, analyses, and information relative to environmental issues in forms of money and other forms presented to administrators within the organization. The information could be adopted for environmental management and assisted in pointing out influential issues. Thus, EAP could help improve working operations and create better image of the organization leading to competitive advantage. In addition, environmental issues were a part of social responsibility, and administrators could manage suitable strategic plans by using aforementioned information. Lehman (2002) conducted a study on international responsibility and sustainability adopting the concept of environmental accounting and global innovation in order to enable comparison on accounting systems and convenience in financial conversion. The study adopted the concepts of social accounting, environmental accounting, and state mechanisms to takecontrol of regulations and public information. According to the results, EAP emphasizing on international responsibility could help administrators with a suitable decision-making process. The information could have greater impacts to administrators to realize and respond to improve and implement the environmental accounting in organization's system (Milne, 1996). The concept of OST was supported by Aras & Crowther (2008) mentioning that EAPand implementation of social issues in strategic planning could help an organization in continual and sustainable practices. Besides, Farneti & Guthrie (2009) pointed out that profits, persons, and globalization were new perspectives for organization sustainability.

Research Questions

Presently, the environmental accounting has become increasingly important due to the ability in presenting economic information relative to environment according to business operation. Previously, this kind of information had not been mentioned ina standard accounting, the information was not therefore reported in the financial statement. In addition, not muchattention on environmental accounting had been paid among accounting researchers.

However, a number of studies pointed out some relevance and benefits of the implementation of environmental management system in specific nation or industry (Burritt & Saka, 2006; Deegan, 2003; Masanet-Llodra, 2006; Staniskis & Stasiskiene, 2006).The environmental accounting has direct contribution to business due to negative effects of pollution globally affecting business operation, society, and politics. Hence, information disclosure relative to environmental issues is needed for sustainability (Murray et al., 2006) in order to communicate with general public on problematic realization and business operation.
By analyzing external and internal influential factors of EAP among ISO 14001 certified listed companies of SET, and the influence of EAP, the analysis would provide insights on how influential factors affect Environmental Accounting Process Innovation (EAI), CAF, and OST. The results could assist administrators in planning, controlling, and decision-making relative to environmental issues beneficial for the organization in business operation. It could be said that the stated type ofaccounting enables financial advantage, organizational and national sustainability in business and environment.

Research Objectives

The objectives of this study were to (1) analyze the influential factors of EAP, (2) analyze the influence of EAP towards EAI, CAF, and OST, and (3) analyze the relationship of factors influencing EAP and OST among ISO 14001 certified listed companies of SET.

Research Methodology

This quantitative research was conducted in order to develop the relationship model of factors influencing EAP and OST among ISO 14001 certified listed companies of SET using a Structural Equation Model (SEM). A set of 200 questionnaireswas used for data collection by introducing to accounting administrators of ISO 14001 certified listed companies of SET. The sample was randomly selected adopting simple random sampling from the list, and the data were verified for further analysis. And, the Path Analysis technique of SEM was selected for data analysis.

Research Results

The results gained by an analysis of SEM for EAP and OST among ISO 14001 certified listed companies of SET pointed out the congruence of model and empirical evidence, as illustrated in Figure 1.

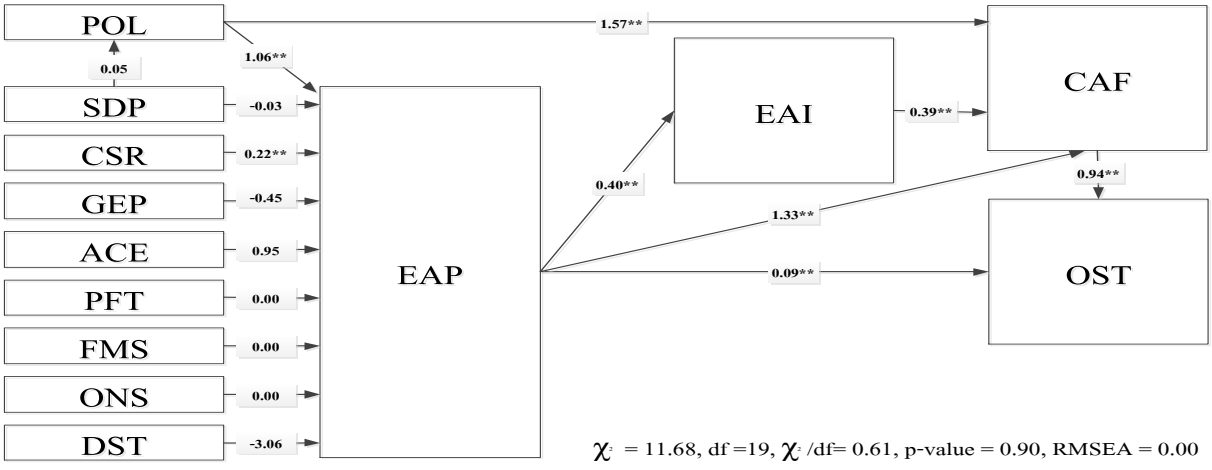

Figure 1 SEM as Hypothesized among ISO 14001 Certified Listed Companies of SET

The results gained by an analysis of SEM index congruence of EAP towards OST among ISO 14001 certified listed companies of SET using Path Analysis technique of SEM pointed out the congruence of model and empirical evidence with Chi-square = 11.68, p = 0.90, df = 19, $\chi 2$ /df = 0.61, RMSEA = 0.00, SRMR = 0.02, GFI = 0.99, CFI = 1.00, and AGFI = 0.96, as demonstrated in Table 1 and Table 2.

Total Effect (TE), Direct Effect (DE), and Indirect Effect (IE)

Individual variables of this study were described as follows:

Stakeholders Pressures (SDP) showed a negative direct effect towards EAP, and showed a positive direct effect towards Environmental Management Accounting Policy (POL), with effect values of 0.03 and 0.05, respectively. Additionally, SDP showed a positive indirect effect towards EAP and EAI with effect values of 0.05 and 0.01, respectively, and showed a negative indirect effect towards CAF and OST with an equal effect value of 0.02.

Environmental CSR (CSR) showed a positive direct effect towards EAP with an effect value of 0.22, at the significance level of 0.01, a positive indirect effect towards EAI through EAP factors with an effect value of 0.09, at the significance level of 0.01, and showed apositive indirect effect towards CAF and OST through EAP factors with an effect value of 0.33, at the significance level of 0.01.

Governance Environmental Accounting Policy (GEP) showed a negative direct effect towards EAP with an effect value of 0.45, and showed a negative indirect effect towards EAI, CAF, and OST through EAP factors with effect values of 0.18, 0.66, and 0.66, respectively.

Accountant Expertise (ACE) showed a positive direct effect towards EAP with an effect value of 0.95, and showed a positive indirect effect towards EAI, CAF, and OST through EAP factors with effect values of 0.38, 1.41, and 1.40, respectively.

Profitability (PFT), Firm Size (FMS), and Ownership Structure (ONS) showed no effect towards EAP, EAI, CAF, and OST.

Debt Structure (DST) showed a negative direct effect towards EAP with an effect value of 3.06, and showed a negative indirect effect towards EAI, CAF, and OST through EAP factors with effect values of 0.23, 4.55, and 4.54, respectively.

EAP showed a positive direct effect towards EAI, CAF, and OST with effect values of 0.40, 1.33, and 0.99, respectively, at the significance level of 0.01, a positive indirect effect towards CAF through EAI factors with an effect value of 0.15, at a significance level of 0.01, and showed a positive indirect effect towards OST through CFA factors with an effect value of 1.39, at a significance level of 0.01.

EAI showed a positive direct effect towards CAF with an effect value of 0.39, at a significance level of 0.01, and showed a positive indirect effect towards OST through CAF factors with an effect value of 0.37, at a significance level of 0.01.

CAF showed a positive direct effect towards OST with an effect value of 0.94, at a significance level of 0.01.

POL showed a positive direct effect towards EAP and CAF with effect values of 1.06 and 1.57, respectively, at a significance level of 0.01.

Table 1 Analysis of SEM Index Congruence

GFI	Criteria	Index Value	Result
$\chi 2$ /df	< 2.00	0.61	Pass
CFI	≥ 0.95	1.00	Pass
GFI	≥ 0.95	0.99	Pass
AGFI	≥ 0.90	0.96	Pass
RMSEA	< 0.05	0.00	Pass
SRMR	< 0.05	0.02	Pass

Table 2 Path Analysis Technique of SEM

Dependent Variable	**EAP**			**EAI**			**CAF**			**OST**			**POL**		
Independent Variable	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**	**TE**	**DE**	**IE**
SDP	0.02 (0.07)	-0.03 (0.07)	0.05 (0.10)	0.01 (0.03)	-	0.01 (0.03)	-0.02 (0.07)	-	-0.02 (0.07)	-0.02 (0.07)	-	-0.02 (0.07)	0.05 (0.09)	0.05 (0.09)	-
CSR	0.22** (0.05)	0.22** (0.05)	-	0.09** (0.02)	-	0.09** (0.02)	0.33** (0.06)	-	0.33** (0.06)	0.33** (0.06)	-	0.33** (0.06)	-	-	-
GEP	-0.45 (0.55)	-0.45 (0.55)	-	-0.18 (0.22)	-	-0.18 (0.22)	-0.66 (0.82)	-	-0.66 (0.82)	-0.66 (0.82)	-	-0.66 (0.82)	-	-	-
ACE	0.95 (0.70)	0.95 (0.70)	-	0.38 (0.28)	-	0.38 (0.28)	1.41 (1.02)	-	1.41 (1.02)	1.40 (1.03)	-	1.40 (1.03)	-	-	-
PFT	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	-	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	-	-	-
FMS	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	-	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	-	-	-
ONS	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	-	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	0.00 (0.00)	-	0.00 (0.00)	-	-	-
DST	-3.06 (2.56)	-3.06 (2.56)	-	-0.23 (1.03)	-	-0.23 (1.03)	-4.55 (3.75)	-	-4.55 (3.75)	-4.54 (3.78)	-	-4.54 (3.78)	-	-	-
EAP	-	-	-	0.40** (0.06)	0.40** (0.06)	-	1.48** (0.20)	1.33** (0.20)	0.15** (0.04)	1.48** (0.19)	0.09** (0.07)	1.39** (0.21)	-	-	-
EAI	-	-	-	-	-	-	0.39** (0.06)	0.39** (0.06)	-	0.37** (0.06)	-	0.37** (0.06)	-	-	-
CAF	-	-	-	-	-	-	-	-	-	0.94** (0.11)	0.94** (0.11)	-		-	-
POL	1.06** (0.07)	1.06** (0.07)	-	-	-	-	1.57** (0.21)	1.57** (0.21)	-		-	-	-	-	-
χ^2 = 11.68, df =19, χ^2 /df= 0.61, p-value = 0.90, RMSEA = 0.00															

***Note:** p*<.05, p**<.01

Discussion and Conclusion

Discussions and conclusions relative to this study were described according to research objectives as follows:

Factors Affecting EAP

According to the results, it was found that POL and CSR showed a positive direct effect towards EAP, at the significance level of 0.01, with effect values of 1.06** and 0.22**, respectively. The results were supported by Adams & Frost (2008); Chang & Deegan (2008) and Jalaludin, Sulaiman & Ahmad (2011) mentioning that strategic planning directly affected EAP effectiveness among companies and universities. POL had direct effects towards EAP of both government organizationsand public stakeholders in terms of CSR. In addition, it was also supported by Bouten & Hoozee (2013) stating that CSR could make effective EAP.

Influence of EAP towards EAI, CAF, and OST

According to the results, EAP showed a positive direct effect towards EAI, CAF, and OST, at the significance level of 0.01 with effect values of 0.40**, 1.33**, and 0.09, respectively. The results were supported by Murray et al. (2006) mentioning that information disclosure relative to EAP could increase an opportunity in international investment when taking financial marketing behavior changes in consideration. In addition, Llodra (2006) reported that suitable and continual conduction of EAP could make progress on innovation development rather than regular practice. In the following year, Qian & Burritt (2007) conducted a study exploring EAP and motivation in using according to waste management and recycling processes by New South Wales State Government, Australia. It was found that the influence of EAP could reflect the outcome of environmental practice e.g., waste management and recycle and strategic planning in waste management assignments. The outcome could create environmental innovation for the company. Besides, Ferreira et al. (2010) suggested that environmental accounting could help the company recognize environmental issues resulted by organization's activities. This type of accounting assisted in environmental management and its positive effect towards process innovation. As supported by Singh, Jain & Sharma (2015), EMA was underlined by positive motivation—the company could gain competitive advantage, and it was reported that large-scale enterprises in India tended to adopt EMA rather thansmall and medium enterprises (SMEs). In comparison to service sector, chemical and agricultural enterprises tended to fully adopt EMA. Aras & Crowther (2008) suggested that enterprises implementing EAP and social issues in strategic planning would have continual operations, particularly in terms of profit, person, and globalization that are new perspectives for sustainability (Farneti & Guthrie, 2009).

SEM of EAP

According to the results, an analysis using Path Way of SEM pointed out that EAP and CAF showed a positive direct effect towards OST, at the significance level of 0.01, with effect values of 0.09** and 0.94**, respectively. In addition, it was found that CSR showed a positive indirect effect towards OST through EAP factors, at the significance level of 0.01, with an effect value of 0.33**, and EAI showed a positive indirect effect towards OST, at the significance level of 0.01, with an effect value of 0.37**. The results were supported by Lehman (2002) mentioning that EAP emphasizing on value-adding in international responsibility could help administrators in suitable decision-making. The information could have greater impacts to administrators to realize and respond to improve and implement the environmental accounting in organization's system leading to organization sustainability (Milne, 1996).Also,Aras & Crowther (2008) emphasized that enterprises implementing EAP and social issues in strategic planning would have continual operations, particularly in terms of profits, persons, and globalization that are new perspectives for sustainability. In accordance with Farneti & Guthrie (2009), sustainability is an ability in operational continuity without negative changes leading to development and sustainability. Besides,

ability in providing suggestions on technical development and innovation could help create organization sustainability (Zwetsloot, 2003). Interestingly, Aras & Crowther (2008) suggested that sustainability could be created according to the balanced scorecard relative to assessment and evaluation for OST. Additionally, resources and competency of administratorsare other major factors for competitive advantage (Galbreath, 2005) since this advantage usually occurs in situations where a company could make more profits according to better resource and activity managementplan that is considered more effective than other business competitors (Zott, 2003). And, increasing sales and revenue (Ferrari & Parker, 2006) could establish sustainable business growth leading to OST. In addition, Dillard, Brown & Marshall (2005) mentioned that the conceptual framework could be used to create a model in different levels of environmental understanding.

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