SRIPATUM UNIVERSITY

RESEARCH REPORT

MANAGEMENT ACCOUNTANT'S ROLES IN DRIVING SUSTAINABLE DEVELOPMENT OF THAI-LISTED FIRMS

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ABSTRACT

In the recognition of environmental and social challenges, management accountants have been required to play an important role in promoting environmental friendly and socially aware organisations in markets. Demands have placed on management accountants in ideally identifying environmental and social information from all sources of environmental and social improvement expenditures. Rich supply of environmental and social performance information has been required to be incorporated in a company's mandatory and voluntary reports thus simultaneously presenting business opportunities. Such information has also been expected to enhance more effective management decisions when dealing with concerns of stakeholders and/or external users. In responding to the challenges of environmental and social information providers employ accounting profession and international guidelines to prepare sustainability reports.

This study therefore investigates: (P1) management accountants roles in collaborating with a company in identifying environmental and social performance to incorporate in sustainability reports thus driving sustainable development of firms; (P2) management accountants roles in identifying environmental and social information consistent with the indicators of the Global Reporting Initiatives (GRI) guidelines; (P3) management accountants roles in providing environmental and social information to enhance management decisions when dealing with stakeholders engagement in environmental and social matters; and (P4) management accountants being ideally placed to provide the alignment mechanisms to add sustainable value in

economic, environmental and social performance. Qualitative research technique is employed to investigate fifty management accountants from food and beverage manufacturing (10), petroleum and chemical product manufacturing (10), machinery and equipment manufacturing (10), construction (10), and transports (air and road) (10). Legitimacy theory explains the findings.

The results answer P1 that management accountants of sampled firms were playing an important role in collaborating with a company in identifying environmental and social performance to incorporate in sustainability reports. Environmental and social information was collected from all sources of environmental and social performance expenditures within a company to incorporate in sustainability reports. The results answer to P2 that management accountants provided environmental and social performance information to incorporate in sustainability reports consist with the indicators of the Global Reporting Initiatives (GRI) guidelines. Sustainable companies disclosed environmental friendly and socially aware organisations when maximizing profits in markets. The results also answer P3 that management accountants were intending to provide environmental and social information that enabled enhanced management decisions at boardroom levels. Environmental and social performance indicators in the reports helped management to guide decision-making when dealing with stakeholders' engagement in environmental and social matters. A key finding of the study answered P4 that management accountants were ideally placed to provide the alignment mechanisms to add sustainable value in economic, environmental and social performance. Management accountants were involved in sustainability strategy capturing non-financial information – environmental and social improvement and preparing sustainability reports. They aim to perform a more active role in collating environmental and social information thus guiding strategic directions for the development of sustainable companies. This helps sustainable companies to disclose three areas of performance – economic, environment and social thus promoting environmentally and socially aware organisations along with economic improvement.

Keywords: management accountant, environmental performance indicator, social performance indicator, sustainable development, sustainability reporting

GLOSSARY

Sustainable strategy	Sustainable strategy is a business strategy that aims to drive long-term corporate growth and profitability by mandating the inclusion of environmental and social factors in the business model.
Sustainability report	Sustainability report provides users with a way to make the right decisions on investment in which it in turn create shareholder value in the eye of stakeholder in markets
Sustainability accounting	It is a business tool that helps identify and measure environmental and social information to enhance management decision and reporting purposes
Sustainable success	Sustainable success means achieving the development of three areas of performance – economic, environment, and social while having ability to maintain the challenge of responding to environment and living things in long-term
Management accountants' roles	The roles of management accountants in environmental and social information measurement and identification for sustainability reports
Stakeholders' demands on sustainable success	The demands of stakeholders that show their interests in environmental and social responsibility when sustainable companies maximizing profits

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Introduction

Background of the study

The demands placed on management accountants have grown in recognition of significant sustainability challenges while simultaneously creating business success as best practices in sustainable development of firms (Collins, Lawrence, Roper, & Haar, 2011). Management accountants are required to provide more effective information on economic, environmental, and social performance for enhancement of decision-making of internal and external users. Accounting information provided in reports is a response to the sustainability challenge of sustainable development of firm. Environmental and social factors incorporated in sustainability reporting along with economic performance should be recognised based on the importance of intergenerational time-scales (Jones, 2010). When it comes to practices, sustainability accounting is considered appropriate to help in capturing and measuring environmental and social information from development of environmental-friendly and social well-being as a whole (Jones, 2010). As sustainable development is based on policy and reporting, the PAIB needs to gain more understanding about the concepts of sustainability and the challenges in achieving the long-term growth in shareholder value or value for money (IFAC, 2006). Thus, the roles of management accountants should be to be involved in strategy-setting and providers of information to support business strategy related to environmental and social sustainability (Collins, et al., 2011).

According to the IFAC (2006), professional accountants in business (PAIB) need to understand and demonstrate how companies achieve environmental and social efficiencies from sustainable development practices. An existing accounting system needs to help public corporations disclose uses of natural resources (e.g. material, energy, water, and air) in production

or service processes (Neungruthai Petcharat, 2015). It helps create more accurate accounting information in relation to environmental and social concerns. As management accountants are known as accountancy professionals, they have an important role to play in measuring and identifying environmental and social data while delivering sustainable development information to stakeholders and the public (Jones, 2010). Management accountants need to play an important role in providing accurate information in sustainability disclosures for enhancement of management decisions and reporting purposes (Neungruthai Petcharat, 2015). Management accountants are increasingly seen to be playing an important role in organizational decision-making processes (Byrne & Pierce, 2007). They are also paying most attention to incorporate environmental and social information along with eco-efficiency in sustainability reporting (Neungruthai Petcharat, 2015). In this relation, stakeholder engagement can be a key part of sustainability reports disclosing three areas of triple bottom line – economic, environmental, and social performance (Karlsen, Græe, & Massaoud, 2008). Management accountants provide data accuracy on environmental and social performance to improve decision-making at a boardroom level when accountability on environmental and social issues matters (Collins, Kearins, & Roper, 2005). This provides firms with the right tools for incorporating environmental and social performance in sustainability reporting to support demands of stakeholders and the public. In the public sectors, sustainability is considered as a measurement tool that helps management accountants to capture and report three areas of performance – economic, environmental, and social well-being (Neungruthai Petcharat, 2015). The roles of management accountants are connected with the elements of economic, environmental and social factors while accounting practices are placed to capture and identify information. Firms are responsible for developing sustainability strategies while management accountants are playing a role for environmental and social responsibility (Collins, et al., 2011).

It can be seen that management accountants can play a significant role in corporate sustainability reporting while setting sustainability strategies for sustainable development of

firms. Sustainability accounting integrated with exiting accounting systems helps measure, understand and deliver information on economic, environmental, and social factors. The roles of management accountants in sustainable development of firms are to act as collaborators in delivering information on three areas of performance – economic, environmental and social to enhance decision-making and for reporting purposes. In order to provide data for sustainability reporting, management accountants are involved in setting sustainability strategies thus motivating upper-level management to take environmental and social issues into accounts. Thus, by providing more accurate data on environmental and social factors, they enhance management decisions at boardroom levels for sustainable development and business opportunities when promoting sustainability achievements in markets.

Research problem

Management accountants are trusted to guide business decisions and drive stronger sustainable successes along with operational performance. The roles of management accountants are expected to combine financial expertise and business acumen to bring better business opportunities in order to achieve sustainable business success. The combination of financial expertise and business management skills of management accountants enables them to provide data accurately to guide critical business decisions and drive strong business performance. To meet corporate sustainability, management accountants as collaborators with a company drive to provide environmental and social data incorporating both mandatory and voluntary disclosures. The reports help promote how companies meet environmental and social improvement targets. Global Reporting Initiatives (GRI) has developed a framework for companies to fully report three areas of performance – economic, environmental and social in the form of a triple bottom line report. Over a thousand firms today are using the GRI's framework as a basis for publishing annual reports on sustainability thus having the ability to promote how they achieve sustainability targets (Institute of Management Accountants, 2008). The GRI's framework provides companies

with a way to identify and capture environmental and social information from all sources of activities relating to improvements in the environment and society as a whole.

The accounting profession is however seeking ways to develop an environmental and social framework to more fully identify and capture environmental and social performance indicators (Institute of Management Accountants, 2008). Environmental and social information has tried to incorporate some level of quantification in annual reports (Institute of Management Accountants, 2008). Management accountants should play an important role in creating data accuracy on environmental and social development to include information in both mandatory and voluntary disclosures. The information not only enables more effective decision-making but also supporting investors' demands. Management accountants need to understand the challenges in the adoption of sustainability accounting practices (Zvezdov, 2012). Successful corporate management understands how environmental information creates the link between environmental sustainability and eco-efficiency, which plays a decisive role in achieving corporate sustainability in the long-term (S Schaltegger & Burritt, 2010). As a result, sustainability accounting practices have been introduced to the sustainable development of firms to facilitate companies in dealing with sustainability issues (Zvezdov, 2012). This is to maintain the connection between societal and economic progress linked with business strategies and corporate social responsibility (CSR). This study examines management accountants' roles in providing environmental and social information for management decisions in relation to costs and savings. Environmental and social information in annual reports for internal and external decision-making is involved. The strategic planning for environmental and social investments of a sample group is considered for this study. Environmental and social information in annual reports and voluntary disclosures as captured based on the guidelines of the GRI, is examined. Management accountants' roles in driving sustainable success and involvement in sustainability strategy-setting are explored.

Research questions and propositions

This study examines management accountants' roles in creating data accuracy on environmental and social performance. In Thailand, little is known about sustainability accounting for cost identification and measurement of environmental and social performance (Neungruthai Petcharat & Mula, 2013). Management accountants are not fully involved in a corporate sustainability. Previous studies (Kuasirikun, 2005; Neungruthai Petcharat & Mula, 2013; Ratanajongkol, Davey, & Low, 2006; Rittippant, Tangthuttong, Sinyodyeam, & Aurjongmanee, 2011) claim that environmental and social information in both mandatory and voluntary disclosures are aimed to create positive reputations in markets. Management accountants appear biased to be involved in providing accurate environmental information while having knowledge of, and skills in sustainability accounting concepts/practices (ICAEW, 2004b). As a result, companies may have difficulties to fully include environmental and social performance in their disclosures to fulfil the needs of stakeholders and the public (ICAEW, 2004b). Sustainability accounting needs to be introduced to a company in Thailand to achieve sustainable success thus creating positive impacts on the economy, environment and society in the long-term. The following research questions are asked and propositions posed in this investigation.

> **RQ1:** To what extent do management accountants play an important role in identifying and capturing environmental and social information for sustainable success of listed companies in Thailand?

> **Proposition 1** (P1)**:** *Management accountants collaborate with a company in identifying environmental and social performance to incorporate in sustainability report thus driving sustainable development of firms*

Proposition 2 (P2): *Management accountants capture and identify environmental and social information along with the knowledge of the Global Reporting Initiatives (GRI) guidelines*

RQ2: How can management accountants play an important role in driving sustainable success thus incorporating data accuracy of environmental and social performance of firms?

Proposition 3 (P3): *Management accountants provide environmental and social information to enhance decision-making at boardroom level dealing with stakeholder engagement in environmental and social matters*

Proposition 3 (P4): *Management accountants are ideally placed to provide the alignment mechanisms to add sustainable value in economic, environmental and social performance*

Management accountants are involved in strategy-setting roles in identifying and measuring environmental and social information to incorporate in annual reports and/or voluntary disclosures. They are ideally placed to provide the alignment mechanisms and collaborate with a company in producing full reporting that reflect sustainable strategies to fulfil the needs of stakeholder groups (Collins, et al., 2011). Management accountants have a full understanding of environmental and social identification to provide more effective information to enhance investment decisions and support the demands of stakeholder groups. Internal measure of the GRI guidelines are employed as a basis for sustainability reporting thus adding shareholder value and value for money. In Thailand, little is known about sustainability reporting for cost identification and measurement of environmental and social performance (Neungruthai Petcharat & Mula, 2013). Management accountants are not fully involved in corporate sustainability. Previous studies (Kuasirikun, 2005; Neungruthai Petcharat & Mula, 2013; Ratanajongkol, et al., 2006; Rittippant, et al., 2011) claimed that environmental and social information in both mandatory and voluntary disclosures were aimed to create positive reputations in markets. Management accountants appear biased to be involved in providing accurate environmental information while having knowledge of, and skills in environmental and social identification and measurement (ICAEW, 2004b). As result, companies are not able to fully include environmental and social

performance in their disclosures to fulfil the needs of stakeholders and the public (ICAEW, 2004b). Management accountants cannot provide sufficient information with respect to environmental and social identification and collaboration of financial and non-financial information (Collins, et al., 2011) in relation to the environmental aspects. For such information relating to a company's effective sustainability report to create shared value, management accountants must realize the link between environmental concerns and as providers of information (Collins, et al., 2011). Management accountants' roles are ideally placed to provide accurate environmental information while having knowledge of, and skills in environmental and social measurement (ICAEW, 2004b). This could help a company to fully capture accounting information on environmental factors to be integrated in a company's internal reports and voluntary disclosures to fulfil the needs of stakeholders and the public (ICAEW, 2004b). Thus, management accountants play an important role in creating greater relationships between a company and its stakeholders. This study focuses on management accountant's roles in creating environmental sustainability information and explaining why a company needs to create more accurate accounting information on environmental factors. Capturing environmental data along with the indicators of the GRI by changing environmental management accounting practices creates data accuracy to enable more effective decision-making and reporting.

Chapter 2

Literature review

Management accountants' roles in sustainable success of firms

The roles of management accountants are expected to combine financial expertise and business acumen to achieve sustainable business success. They need to provide data accuracy to guide critical business decisions and drive strong business performance. To meet corporate sustainability goals, management accountants drive as collaborators with a company to provide environmental and social data incorporating both mandatory and voluntary disclosures. The reports help promote how companies meet environmental and social improvement targets. Thus, the roles of management accountants with a combination of financial expertise and business acumen are expected to drive sustainable business success. Data accuracy incorporated in the financial reports is aimed to guide critical business decisions and drive strong sustainable business performance. The accounting profession is aiming to employ an environmental and social framework to more fully identify and capture environmental and social performance indicators (Institute of Management Accountants, 2008). Management accountants have intentions to capture environmental and social information to incorporate at some levels of quantification in annual reports (Institute of Management Accountants, 2008).

Management accountants' roles in moving towards corporate sustainability should be involved in setting sustainability strategies, thus supporting firm to achieve the best sustainability outcomes (Cullen & Whelan, 2006). Environmental information incorporated in a company's reports needs to be accurately identified and measured when employing to promote environmental sustainability for value creation (ICAEW, 2004b; Neungruthai Nickie Petcharat, 2012; Stefan Schaltegger, 2004). Management accountants need to understand the challenge in the adoption of

sustainability accounting practices (Zvezdov, 2012). In this relation, the connection between societal and economic progress is linked with business strategies and non-financial reporting. Environmental performance incorporated in the disclosures need to identify how a company achieves its sustainability for value creation. This creates an inspiration for sustainability practitioners to build the idea to lead to measuring or identifying environmental and social value along with economic efficiency. This can only support sustainable companies in Thailand to report more accurate accounting data on environmental facets to address stakeholders' and public's demands (Neungruthai Petcharat & Mula, 2013). Thus, management accountant's roles drives as a collaborator with a company in capturing, identifying, and measuring environmental data based on environmental management accounting concepts/practices. This would assist a company to move toward corporate sustainability as a business goal (Neungruthai Nickie Petcharat, 2012). They also fulfil their traditional role in identifying and measuring all sources of expenditures paid for environmental improvement (Collins, et al., 2011). In this relation, environmental management accounting should be developed or designed as a business tool and mechanism based on such a conceptual model or framework to support their firms in achieving sustainability targets (Collins, et al., 2011).

Management accountants play an important role in creating data accuracy on accounting to incorporate in both mandatory and voluntary disclosures. Accounting information not only enables more effective decision-making but also supports investors' demands. Environmental and social data in reports need to be accurate for more effective decision-making in relation to environmental and social performance. In accordance with stakeholders' concerns, companies are required to capture full costs of products—which include environment and social impact costs—to support internal decision-making strategies and external disclosure initiatives (Gray 2006; Gray et al. 2001; IFAC 2005). The decisions on sustainable developments aim to help develop environmental and social performance while generating high profits (economic performance) to meet business sustainability goals. According to the IFAC (2006), professional accountants in

business (PAIB) need to understand and demonstrate how companies achieve environmental and social efficiencies from sustainable development practices. Previous studies (e.g. Department of Climate Change, 2008b; Gray, 2006; Gray, Javad, Power, & C.Sinclair, 2001; KPMG, 2007) suggest that incorporating environmental and social data based on the Global Reporting Initiatives (GRI[1]) in a company's report helps a company to promote how sustainability is achieved. A number of comprehensive frameworks have been developed building on the concept of environmental and social identification to identify environmental and social information in mandatory disclosures – but not all –integrating environmental and social data in a financial report in the Thai context (Kuasirikun, 2005). As such environmental and social impacts identified by the GRI (2006), GRI (2010), and (GRI, 2011) should be fully captured to enhance internal management decision-making and help companies report effectively.

Previous studies claimed that management accountants should take environmental and social cost identification and measurement into account (CIMA, 2005; Collins, et al., 2011) to create data accuracy in a company's reports (Neungruthai Petcharat & Mula, 2013). Environmental and social information should be captured from all sources of expenditures and non-expenditures based on business activities. Sustainability strategies should be introduced to companies to help provide quality data on environmental and social aspects (Burritt & Schaltegger, 2010; Neungruthai Petcharat & Mula, 2013). This can help firms create corporate shared value when disclosing three areas of performance – economic, environmental and social – in the eyes of stakeholders and the public (Porter & Kramer, 2006). This helps create the sustainable development of firms for better competition in markets.

[1] The Global Reporting Initiative (GRI) is 'a multi-stakeholder non-profit organization that develops and publishes guidelines for reporting on economic, environmental, and social performance as sustainability performance' (KPMG, 2007, p.2).

Sustainability strategies

The term 'sustainability' was developed based on sustainable development for environmental and social performance of organizations (CIPFA, 2004). Sustainability is one of the commitments to the leadership in maintaining a balance between economic success, protection of the environment, and social responsibility, which has been fundamental to the corporate culture for decades. Vanegas (2003) asserts that sustainability means the preserving of the basic supports of human life and natural habitats—for example, air, water, land and/or food. According to Goodland (2002), sustainability means maintaining positive impacts from influences of human, social, economic and environmental concern. The Sigma Project (2003, p 7) has defined sustainability as:

> *'…the generation, analysis and use of monetarised environmental and socially related information in order to improve corporate environmental, social and economic performance. A more complete and technical name could be 'Sustainability Financial Accounting', to differentiate this approach (focused on monetised data) from wider forms of sustainability reporting'.*

At a boardroom level, sustainability is elevated in a way to create eco-efficiency—along with the development of environmental and social performance (Epstein & Roy, 2001). A sustainability leader aims to find the right solutions for sustainable development while continuing to take responsibility and increasing economic success both immediately and in future. Thus, a sustainability strategy within a company refers to activities in three areas of performance – economic, environmental, and social. This has to reflect reductions in use of materials, energy, and water when producing products and providing services. Sustainability strategy also aims to reduce wastes, emissions, and air pollution that directly create environmental harms and social concerns. Companies mainly provide corporate environmental performance and social responsibility (CSR) reporting to create a positive reputation and image in the marketplace (Gray,

2006), but fail to develop a coherent sustainability policy. As a result, companies are unable to encompass internal management decisions to improve economic, environmental and social performance (Berkel, 2003).

According to Goodland (2002), sustainability means maintaining positive impacts from influences of human, social, economic and environmental concerns. However, Wright (2002) argued that sustainability was about retaining a balance between economic, social and environmental factors which influence humans' decision-making. In relation to this, environmental sustainability is involved in making decisions and taking actions to protect natural resources, particularly preserving the capability of the environment to support the quality of human life and other living creatures. Thus, human beings are the core of sustainable development both as beneficiaries and protectors. Data collected over many decades point to people globally having not acted sustainably. Evidence provided through various agencies and research centres shows that the development path the world has followed is creating detrimental impacts on the global climate. Increases in tides, more devastating floods, fires, cyclones, typhoons and earthquakes, with predictions that they will become worse in the future, are all pointing to the need to change the development path we have tread (UN, 2008). Change can only come by people advocating for it through their political leaders. Thus people are at the core of policy decisions and must express their concerns about the economy, environment and society.

In this study, management accountants' roles in sustainability strategy refer to where they are driving as collaborator in building strong sustainability achievements within firms. Management accountants need to provide accurate accounting information in relation to environmental and social improvement for enhancement of decision-making at boardroom level. Environmental and social information needs to guide sustainable companies with the right solutions when increasing economic success as sustainability leader in the industries. In this

relation, international guidelines such the Global Reporting Initiatives (GRI) is employed to help identify and measure environmental and social factors based on indicators provided.

Global Reporting Initiatives Guideline and framework

Global Reporting Initiatives (GRI) has developed a framework for companies to fully report three areas of performance – economic, environmental and social – in the form of a triple bottom line report. Over a thousand firms today are using the GRI's framework as a basis for publishing annual reports on sustainability thus having the ability to promote how they achieve sustainability targets (Institute of Management Accountants, 2008). The GRI's framework provides companies with a way to identify and capture environmental and social information from all sources of activities relating to improvement in the environment and society as a whole. Previous studies (e.g. Department of Climate Change, 2008b; Gray, 2006; Gray, et al., 2001; KPMG, 2007) suggest that incorporating environmental and social data based on the Global Reporting Initiatives (GRI[2]) in a company's reports helps a company to promote how its sustainability is achieved. KPMG (2012) claimed that Integrated Reporting could help firms explain their operational performance regarding shareholder added value. Recently, GRI and International Integrated Reporting Council (IIRC) have agreed that corporate reporting needs to show the link between a company's financial statement and its environmental and social performance (Deloitte, 2011; The IIRC Organization, 2013). Integrated Reporting creates a better opportunity for a company to support investors' and stakeholders' interests in embracing a sustainable future (Deloitte, 2011; The IIRC Organization, 2013). Based on environmental and social indicators of international measures such as ISO 14000 for Environmental Management and ISO 18000 for Health and Safety at Work Management, international measures have been introduced as guidelines to help reporting employee-friendly and environmentally aware

[2]The Global Reporting Initiative (GRI) is 'a multi-stakeholder non-profit organization that develops and publishes guidelines for reporting on economic, environmental, and social performance as sustainability performance' (KPMG, 2007, p.2).

information in order to ensure that business practices meet environmental and social development requirements (Kuasirikun & Sherer, 2004). In this regard, previous studies suggest that environmental and social performance in the Thai context could go a long way to improving accounting's approach to these issues.

This study employs environmental and social indicators of the Global Reporting Initiatives (GRI, 2014) guidelines as an analysis theme to seek where environmental and social information identified and measured along with the indicators of the guidelines. The focus of indicators in this study includes Material, Energy, Biodiversity, Emissions, Effluences and Wastes, Product and Services, Environmental Grievance Mechanisms, Employment, occupational Health and Safety, Training and Education, Human Rights, Local Communities, Anti-corruption, and Customer Health and Safety. The indicators of the GRI in this study help management accountants to understand and recognize all sources of expenditures paid for both short-terms and long-term development of environmental and social performance while having ability to maximize profit in markets. In relation to this, environmental and social management programs are also identified based on the indicators of the GRI guidelines. Reductions in all negative impacts on environmental and society that might not be paid by the company are also included in identification and measurement using indicators of the guidelines. In doing all of these, environmental and social identification are considered appropriate for this study to examine where accounting information on environmental and social improvement is captured to incorporate in a company' disclosures internally and externally. Environmental and social performance in sustainability reporting helps improve effective decision-making at boardroom level and external users.

Table 1 Categories and aspects of environmental and social indicators of the GRI guidelines (GRI, 2014, p.44)

Environmental performance	Social performance		
	Labour Practices and Decent Work	**Human Rights**	**Society**
Material Energy Biodiversity Emissions Effluences and Wastes Product and Services Compliance Transports Overall Supplier environmental assessment Environmental Grievance Mechanisms	Employment Labour Management Relations Occupational Health and Safety Training and Education Diversity and Equal Opportunity Equal Remuneration for Women and Men Supplier Assessment for Labour Practices Labour Practices Grievance Mechanisms	Investment Non-discrimination Freedom of Association and Collective Bargaining Child Labour Forced or Compulsory Labour Security Practices Indigenous Rights Assessment Supplier Human Rights Assessment Human Rights Grievance Mechanisms	Local Communities Anti-corruption Public Policy Anti-competitive Behaviour Compliance Supplier Assessment for Impacts on Society Grievance Mechanisms for Impacts on Society

Sustainability reporting

Corporate sustainability reports encompass details about sustainability challenges, sustainable strategies, key performance indicators of sustainable development, and future goals of sustainable strategies. Corporate sustainability reports are organized and presented in accordance with indicators of the Global Reporting Initiative (GRI) that provide guidelines and a framework for three areas of performance reporting – economic, environmental, and social. In Thailand, firms incorporate economic, environmental and social information in the corporate social responsibility (CSR) report to support the demands of stakeholders and the public. Thai companies have a growing public awareness regarding the roles of the corporate in the development of society and environment impacts. The evidence has widely shown from reporting environmental and social performance associating with eco-efficiency in the form of a triple bottom line and the guidelines of the global reporting initiatives or GRI (Hall, 2002; O'Dwyer, 2001). Previous studies claim that (Nickie Petcharat, 2013; Pipat Yodprutikarn, 2010) Thai companies have however reported environmental and social performance against the backdrop of environmental and social issues affecting the Thai community. Environmental and social data appear inconsistent when incorporated in annual reports and CSR disclosures (Prayukvong & Olsen, 2014). As a result, environmental and social performance in the Thai context has been known to contribute to the competitiveness of sustainable companies by improving environmental and social performance along. Environmental and social information could support stakeholders' interests in a collaborative way – reducing operational risk, economic growth, how resources are managed, and how social and communities where companies operate are developed (Neungruthai Petcharat & Mula, 2013).

According to Neungruthai Petcharat and Mula (2013), sustainable companies in Thailand tend to report more accurate accounting data on environmental and social facets to address stakeholders' and public's demands. Economic, environmental and social information

provided in CSR reports aims to not only enable more effective decision-making but also drive more sustainable success. Environmental and social performance integrated in CSR reports along with eco-efficiency, aims to create positive impacts on environmentally and socially friendly firms. Companies have paid less intention to incorporating environmental or social data in their annual reports. As a result, international markets have been concerned about social well-being and environmental awareness of Thai companies for decades (Kuasirikun & Sherer, 2004). Companies have been required to ensure that they have met international and social environmental standards (Somporn Thapanachai, 2000; Kuasirikun and Sherer (2004). They suggest that environmental and social data should be accurately reported in a company's financial statement as associated with the information in voluntary disclosures.

In Thailand, economic impacts on business activity have been contributed to a large part of environmental sustainability in mandatory disclosures in order to satisfy information needs of stakeholders and the public (Kuasirikun, 2005; Lin, 2009; SET, 2008; Suttipun & Stanton, 2012). The communicative value of environmental sustainability can be created from accurate data in mandatory and voluntary disclosures when satisfying information needs to stakeholders and the public. The Stock Exchange of Thailand (SET) has required Thai-listed companies to set, implement, and incorporate policies and procedures for environmental improvements in their reports (Lin, 2009). Companies can use the principle of either "explain" or "comply" with environmental sustainability reporting of both mandatory and voluntary disclosures (SET, 2008; Suttipun & Stanton, 2012). In this respect, environmental indicators in the GRI guidelines are introduced to Thai-listed companies to basically help them publish their environmental performance and to promote environmental sustainability (GRI, 2014; Institute of Management Accountants, 2008; The IIRC Organization, 2013). This creates more accurate information on environmental facets of their operations to enable more effective decision-making on cost savings as well as having the ability to satisfy information needs of stakeholders and the public (Adams, 2010; Chansarn, 2013). In sustainability reports, SET has set the Corporate Social Responsibility

Guidelines for Thai-listed companies to report environmental and social responsibility thus satisfying information needs to stakeholders. The Guidelines include 1) good corporate governance, 2) fair business operation, 3) respect of human rights and fair treatment of labour, 4) consumer responsibility, 5) participation in social development, and 6) environmental conservation.

Previous studies (e.g. S. Kraisornsuthasinee, 2006; Kuasirikun & Sherer, 2004; Lin, 2009; Neungruthai Petcharat, 2015) claim that the extent of environmental information in mandatory and voluntary disclosures by listed companies has not been clearly identified or measured using either set of international guidelines. Companies basically understand environmental and social responsibility practices, as well as recognize environmental information based on the corporate social responsibility guidelines of SET (2008). In addition, as a voluntary regime, little information on environmental factors was incorporated in the CSR disclosures in an informative form (Moisescu & Mihai, 2006; Neungruthai Petcharat, 2015). Companies failed to sufficiently incorporate environmental information in external reports while only few companies fully disclosed their carbon emissions, energy and water consumptions, and total volume of waste productions externally (Sirinut Thanatrakolsri, 2014).

Environmental information in reports enhances management decisions while promoting environmental sustainability (SET, 2008; Suttipun & Stanton, 2012) both immediately and in future. The Stock Exchange of Thailand (SET) has introduced new principles of corporate governance for listed companies to include economic, environmental, and social performance in annual reports since 1999 (Suttipun & Stanton, 2012). The SET has required Thai-listed companies to incorporate corporate environmental and social performance in annual reports along with eco-efficiency for value creation (SET, 2008). This includes implementation and incorporation of policies and procedures for improvements in environmental and social performance (Lin, 2009). In 2007, the SET has changed the voluntary approach by forcing listed

companies to one of “comply or explain” their environmental performances (Suttipun & Stanton, 2012). Thus, social and environmental sustainability of listed companies was required to be incorporated in annual reports as mandatory disclosures in 2008 (Suttipun & Stanton, 2012).

Thai-listed companies have paid attention to identifying and measuring social dimensions while neglecting environmental issues (Kraisornsuthasinee & Swierczek, 2009; Prayukvong & Olsen, 2014). As a result, environmental reports did not accurately identify how companies met the needs of corporate sustainability when disclosing little environmental achievements (Nongnooch Kuasirikun & Sherer, 2004). Based on the literature, a comprehensive framework has been developed building on the concept of sustainability management accounting that identifies environmental information in mandatory disclosures – but not all – about accurate accounting data of environmental impact costs in a company’s reports (Nongnooch Kuasirikun, 2005). Thus, an environmental accounting system for measurement and control should be further developed for environmental sustainability to provide clearer representation of how a company achieves environmental sustainability (Nongnooch Kuasirikun & Sherer, 2004) thus creating eco-efficiency on sustainable development (Kraisornsuthasinee & Swierczek, 2009; Prayukvong & Olsen, 2014).

Environmental performance in the Thai context using CSR disclosures aims to address increased concerns of stakeholders’ and markets’ demands. Environmental information identified in the reports should be relevant to accounting performance disclosures along with a good environmental reporting policy that enables companies to effectively create long-term profitability of the ‘green’ organizations (Connelly & Limpaphayom, 2004). Environmental performance is reported to address increased concerns of stakeholders and the public while creating a company’s image of an environment-friendly organization in marketplace (Connelly & Limpaphayom, 2004; Yongvanich & Guthrie, 2006). In Thai context, environmental reporting is relevant to accounting performance disclosures along with a good environmental reporting policy

that enables companies to effectively create long-term profitability of the ‘green’ organizations (Connelly & Limpaphayom, 2004). However, as the measurement and identification of environmental costs are difficult and complex (IFAC, 2005), companies have seemingly disclosed environmental information as little as possible (Moisescu & Mihai, 2006). Environmental performance is reported to address increased concerns of stakeholders and the public while creating companies images of environment-friendly organizations in marketplace (Connelly & Limpaphayom, 2004; Yongvanich & Guthrie, 2006). Environmental data should be consistently integrated in annual reports and CSR disclosures. In relation to this, a proper conceptual model of environmental standards can enhance productivity and competitiveness, while maximizing shareholder wealth in marketplace.

Environmental and social information however needs to be further developed by integrating accounting of a company’s report with voluntary disclosure. Meanwhile cost information of social and environmental factors needs to be accurately identified and measured, especially the factors determining ways in which companies disclose their environmental and social performance to stakeholders and the public (S. Kraisornsuthasinee, 2006). An integration of environmental and social data in a Thai company’s reports falls short of companies’ potential to enable accounting communications in a Thai context (Nongnooch Kuasirikun & Sherer, 2004; Suraphan Thawornwong, 2011). Nongnooch Kuasirikun (2005) suggested that future research should explore how the Thai accounting profession and relevant governmental agencies might be engaged in exploring and developing a more enabling accounting practice. This would make the changes that accommodate and provide balanced representation in both numerical and narrative forms. This would be a way in which further development of environmental and social accounting concepts can be given impetus for environmental and social aspects to the Thai context (Nongnooch Kuasirikun, 2005). Thus, with a focus on environmental and social reporting perspectives, environmental and social data identified and measured accurately are the main aims of this study. These aims are to describe and evaluate how environmental and social information

incorporated in reports can effectively enhance management decisions. Environmental and social data provide management levels with a way to cope with cost savings through resources efficiency, waste minimization, and pollution abatement while creating eco-efficiency along with environmental and social performance. This study employed the Corporate Social Responsibility Guidelines of SET in 2008 (Respect of human rights and fair treatment of labour, Consumer responsibility, Participation in social development, and Environmental conservation (Suttipun & Stanton, 2012)) as a measurement theme. This is to seek where environmental and social information is provided to enhance decision-making and reporting purposes. Environmental and social identification identified in the sustainability reports is discussed in the following section.

Environmental and social identification and measurement approach

Identification and measurement approach of environmental and social data is most likely concerned about how company meets the needs of sustainability achievements. There is no right approach that can be named one. Although sustainability accounting researchers (Ball, 2002; Burritt & Schaltegger, 2010; Stefan Schaltegger, 2004; S Schaltegger & Burritt, 2010) have found ways to categorise environmental and social information incorporating in sustainability reports, data is most likely identified from environmental and social improvement but not all. International measures such as Global Reporting Initiatives have provided environmental and social indicators as guidelines for sustainable organizations disclosing environmental and social performance along with eco-efficiency (GRI, 2006, 2010, 2011, 2014). Those indicators however appear complex for the firms that are not having sustainability strategy or procedures for environmental and social improvements. Current accounting systems also do not accurately identify and measure costs or expenditures regarding environmental and social factors (Neungruthai Petcharat & Mula, 2013; N. N. Petcharat, 2012). As a result, management accountant needs to deal with matters thus driving as a collaborator with the company to

accurately incorporate environmental and social information in sustainability disclosures (Neungruthai Petcharat, 2015).

As the international market has been concerned with environmental awareness by companies in Thailand since the last decade (Trotman, 1981), companies are required to ensure that they have met international environmental standards (Thapanachai, 2000; Tungrhapheephakorn, 2001cited in Nongnooch Kuasirikun and Sherer (2004)). To create environmental value, environmental data need to be precisely reported in a company's financial statement associated with voluntary disclosures in the form of a corporate social responsibility (CSR) report. Stakeholders also become increasingly interested in the development of economic performance along with environmental and social development. Management and identification of environmental and social performance are aimed to incorporate environmental costs into financial reports for disclosure in the form of a triple bottom line report (Berkel, 2003; Gadenne & Zaman, 2002; Hubbard, 2009). In the meantime, companies use cost information to support business decision making processes on cost measurement (Berkel, 2003). In addition, National Greenhouse and Energy Reporting (NGER) legislation in Australia requires companies to report lower levels of energy consumption and carbon emission depletion in producing products and providing services (Department of Climate Change, 2008a). Companies need to provide environmental and social performance indicators in relation to their use of natural resources, as well as improvements to society, employees, and the environment as part of the Global Reporting Initiative (GRI) (KPMG, 2007). Thus, companies can measure not only environmental costs, but also the wise management and use and flows of resources, energy and water entering their production processes (Bose, 2006; Gale, 2006). This could help companies reduce high levels of energy usage, as well as creating lower carbon emissions (Gale, 2006; UNDSD, 2001). A number of previous studies have been identified where costs are measured and are associated with environmental factors in relation to the production and/or service processes, as discussed below.

The UNDSD (2001), for example, claimed that environmental costs should be measured separately from overhead expenditures. Sustainable companies could provide information on penalties or fines relating to environmental prevention and/or emissions management such as wastes, solid, and emissions (non-product outputs). Schaltegger and Muller (1998), cited in Cãpusneanu (2008), indicated that environmental costs can be identified from all expenditures companies may spend in managing reductions in wastes and emissions, including negative impacts on the environment, and environmental penalties/fines. Gale (Gale, 2006) measured costs of environment from three categories—use of raw materials, energy, and water in production processes; management of wastes, solids and/or emissions created from producing products and providing services; and expenditures provided for waste, solid, and/emission permits. Savage, Ligon and Lomsek (2001) also recognized environmental costs as funding provided to reduce negative impacts on the environment. Consequently, environmental costs could be measured from various dimensions of overhead expenditures that depend on the needs of companies to support their environmental performance.

Corson (2002) argued that measurement and/or identification of environmental costs motivated companies to be more concerned about creating value for humans and natural systems when evaluating emissions and wastes. Companies can also improve economic performance by managing reductions of these costs and their contaminants. In the aircraft industry, for instance, environmental costs are measured from noise and emissions management that have positive results on social and economic performance (Lu & Morrell, 2006). Firms are charged according to the levels of noise and emissions from the number of flights and other types of noise and/or emissions (Lu & Morrell, 2006). This can significantly reduce negative impacts on the environment and society, as well as becoming ‘green organizations’ and being more competitive in the marketplace (EPA Victoria, 2007). Meanwhile, Seidel and Thamhain (2002) used the activity based costing (ABC) approach to identify environmental costs from unit inputs entered into production activities and unit outputs from producing products. This approach helps

companies to possibly classify environmental costs for each production activity before assigning costs to appropriate products. Companies can also provide accurate cost information for disclosures (Bose, 2006), as well as estimating reductions in emissions and wastes (IFAC, 2005; UNDSD, 2001). It can be seen that the measurement of environmental costs could help companies improve their environmental performance by reducing negative impacts on environment and natural systems. Companies could also maintain their development of economic/finance performance by reducing not only costs of production processes, but also emissions and wastes.

In this study, identification and measurement of environmental and social information to incorporate in sustainability reporting refers to all sources of expenditures and activities within companies provided to reduce negative impacts on environment and society. Environmental and social management programs are also identified and categorized as environmental and social information incorporated in sustainability reports. In addition, environmental and social performance required based on demands of stakeholders and public is examined. Stakeholder engagements in sustainability achievement are discussed next.

Stakeholder engagement

In the global economy nowadays, stakeholder engagement has increasingly become a part of sustainable companies when taking environmental friendly and social well-being into account. Environmental and social performance of sustainable firms leads the needs of stakeholders in terms of quality of life and decreasing negative impacts on environmental along with improving economic performance. Stakeholders are interested in sustainability achievement in different ways based on the characteristics or types of business (Karlsen, et al., 2008). By having a well-managed stakeholder engagement, sustainable companies can increase quality of society and environmental performance, as well as economic sustainability (Collins, et al., 2005)

both immediately and in future. Thus, stakeholder engagement needs to be involved in sustainable development of firms when reporting environmental and social sustainability to meet their needs.

Investment appraisal

Sustainable development of firms needs environmental and social information as a better guideline to support decision-making on sustainability achievements and external reporting purposes. In this relation, accountancy professions facilitate sustainable firms with a away to create financial and economic performance by providing more accurate data on environmental and social factors (IFAC, 2006, 2013). For investment appraisal, decision-making processes can be successful when using accounting information captured from all expenditures for improvement in environmental friendly and social well-being (IFAC, 2013). Current accounting practices within sustainable firms need to incorporate with sustainability accounting procedures (Neungruthai Nickie Petcharat, 2012). Companies also need to identify environmental and social information based on improvement factors (Gadenne & Zaman, 2002; Gale, 2006; Sendroiu, Roman, Roman, & Manole, 2006) for sustainability achievement.

Environmental and social information in sustainability reporting provides firms with a way to create a positive reputation and image in the marketplace (Gray, 2006), but fails to develop a coherent sustainability policy. This results in companies being unable to encompass internal management decisions to improve economic, environmental and social performance (Berkel, 2003). Previous studies (e.g. Gadenne & Zaman, 2002; Gale, 2006; Gray & Bebbington, 2001) claim that energy efficiency programs, for instance, should be identified and recognized as cost of environmental improvement for business opportunities in creating cost savings and successful return-on-investment. Environmental and social information needs to be accurately identified and measured while reporting to enhance internal decision-making, thus creating potential investment in environmental efficiency (IFAC, 2005). Companies are recognized as early adopters for establishing sustainability frameworks of conceptual models that could help in

environmental and social cost identification and measurement (Epstein, 2008) including Thai companies (Neungruthai Petcharat, 2015). Without environmental and social identification and measurement, information could not be accurately identified and measured to successfully enhance effective decision-making on sustainable development performance. Environmental and social information couldn't also support demands of stakeholders in sustainability disclosures for their investment decisions.

Decision-making on investment appraisal for a sustainable development of firm aims to improve investment appraisals from using environmental and social information in relationship to environmental friendly and social well-being. Environmental and social information in sustainability reports provides a sustainable company with a way to reduce negative impacts on environment and society while having ability to build stronger economic performance. Thus, by implementing environmental and social information for management decision, this creates compliance with sustainable development legislation and enhance investment decisions to build economic, environmental, and social value adding (Figge & Hahn, 2004). Based on the concerns of stakeholders, a sustainable company is required to report environmental and social performance along with eco-efficiency. This is to seek where accounting information in relation to environmental and social performance enhances effective decision-making in a sustainable development of firm (Gray 2006; Gray et al. 2001; IFAC 2005). This study focuses on the use of environmental and social information for investment appraisal and stakeholder's demands.

Risk management for sustainability achievement

In the rapidly changing business climate, sustainable firms are looking for proactive ways to manage risks in order to create new value to economic, environmental, and social performance. Firms are aiming to manage risks associated with sustainable strategic plan thus ensuring that organizations are ongoing sustainable success from protecting exiting value from

being prematurely destroyed (Sobel & Reding, 2012). Business risks are mainly associated with stakeholder relations as they are concerned as financial investors for all types of business. Sustainable companies always pay most attention to consider ways to improve business performance along with sustaining relationships with affected communities and stakeholders (IFC, 2007). By having good stakeholder relations, sustainable companies are having ability to be more forward growing with emphasis on corporate social responsivity along with positive reputation in market (N. N. Petcharat, 2012). Stakeholder engagement helps sustainable firms to achieve its sustainability by managing and allocating responsibilities for environmental friendly and social well-being to support the needs of stakeholders. Inaccurate accounting information in relation to environmental and social performance can be reluctant to externally disclose performance to stakeholders for fear of providing misleading information (Neungruthai Petcharat & Mula, 2013). As stakeholders have more recently been defined as corporate wealth creation (IFC, 2007), they assist companies in providing more accurate cost information to support disclosures for internal decision-making and to address concerns of stakeholders (Unerman, Bebbington, & O'Dwyer, 2007). This helps companies manage business risks while developing three areas of performance—environment, social, and economic—in reports to stakeholders.

As the heart of sustainable success refers to the value of three areas of performance – economic, environmental friendly and social well-being, stakeholders and environmental factors are recognized and responded to business risks (Aon Environmental Services Group, 2007). In order to succeed in sustainable development, risk management has been considered primarily from a negative point of view when earnings were inadequate from all sources of assets used in production processes (Aon Environmental Services Group, 2007). The aspects of sustainable business need to be evaluated for a sustainability process affecting current operations including identification, analysis, and management of risks. Sustainable firms most likely pay attention to changes in the corporation and changes in the environment in which they could directly and indirectly create positive impacts on future successes (Aon Environmental

Services Group, 2007). Firms need to identify the level of risk embedded within business activities and processes before prioritizing and recognizing significant risks for improving risk management performance as well as expecting benefits of risk management (Airmic Alarm & IRM, 2010). Firms provide the risk management approach that enables a risk management initiative to produce outputs and/or benefits for effective management of risks. This includes improved decision-making including compliance with applicable government requirements, assurance to stakeholders, for instance (Airmic Alarm & IRM, 2010).

According to Yilmaz and Flouris (2010), sustainability risk management requires an effective strategy for sustainable development of firms thus providing coordination, leadership, administration, and financial control, harnessing skills and capacities and ensuring adherence to timetables. Internal and external stakeholders require sustainable firms to consider improving the triple bottom line of social, environmental, and economic factors based on the sustainability concept (Yilmaz & Flouris, 2010). Sustainable firms are mainly focusing on sustainability concepts/objectives in very different ways based on the business activities or processes of products or services produced. Successfully sustainable development of firms however need appropriate sustainability program addressing strategic, operational, collaborative, and governance requirements (Deloitte, 2007). The integration of economic, social, and environmental factors with strategic objectives according to the triple bottom line concept helps firms to manage sustainability risk. This provides many basic benefits which allow a sustainable firm to ensure its sustainability is achieved (Yilmaz & Flouris, 2010). In this relation, stakeholder engagement in sustainable strategy is also driving the evaluation of sustainability achievement, as well as the time is now to undertake initiatives and integrate sustainability into firms (Yilmaz & Flouris, 2010). However, to become sustainable development of firm, proactive sustainability initiatives within companies can be an opportunity to differentiate as a leader in the development of eco-efficiency, environmental friendliness, and social well-being (Deloitte, 2007). As sustainability risk management concepts introduced to the business, this facilitates firms to reduce

short-term risk avoidance and regulation compliance. Proactive sustainability initiatives provide company with a way to create business opportunity from long-term development of brand, competitive, and operational advantage (Deloitte, 2007).

Sustainable success

Sustainable success refers to economic, ecological and social development which is related to making the right decisions, rather than those presented in reports (Lamberton, 2005). Sustainable success can be a confluence of business opportunities from compelling operational outcomes and enhancing competitive advantage in 'green' markets. Due to the development of environmental and social factors, sustainable success is introduced to the firms to improve environmental and social performance along with eco-efficiency both immediately and in future. Environmental and social performance helps companies to build stranger sustainability while having ability to create better relationships with stakeholders and publics thus adding value to the firms. Companies those meeting sustainable success build business opportunities and become better competitors in markets. The word 'sustainable development' has been defined as (WCED, 1987, p. 43):

> *'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'.*

Payne and Raiborn (2001) claimed that sustainable development aimed to take organisational responsibility regarding concerns about environmental and social issues, while still achieving business goals. Sustainable development has been used to measure the development of sustainable progress within companies and relies on policy-makers and experimentation (Wackernagel, Hamilton, Loh, & Sayreiv, 2001). Sustainable development can be also defined as maintaining the balance between extracting resources to support business activities and preserving natural and environmental systems for future generations (CIPFA, 2004). By having

the right decision of sustainable development, firms can maintain the balance between extracting resources to support business activities and preserving natural and environmental systems for future generations (CIPFA, 2004).

Sustainable development was first coined by the UN Brundtland Commission in 1987. The commission defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). What this definition is that human development implies use of resources to meet people's needs. Unless human use these physical resources and their environment in a way that future generation can also meet their needs, we are not acting sustainably. Sustainable development has three constructs of human activity – economic, environment, and social. Thus we cannot discuss sustainable development without including all three constructs as a holistic system. The goal of sustainable development should be to ensure a quality of life now and into the future for our great-grandchildren. Quality of life comes from an appropriate standard of living (economic), in clean liveable surrounding (environment), surrounded by a community locally, regionally and globally that is nourishing intellectually, secure, and encouraging (social). In order to do this, we need to identify and thus anticipate the consequences of our actions now and for decades. The impacts of many actions taken today may not surface for decades into the future.

According to Lamberton (2005), sustainable development is economic, ecological and social development which is related to making the right decisions, rather than those presented in reports. Meanwhile, Payne and Raiborn (2001) summarized sustainable development from a variety of literature as taking organisational responsibility regarding concerns about environmental and social issues, while still achieving business goals. Wackernagel et al. (2001) asserted that sustainable development had been used to measure the development of sustainable progress within companies and relied on policy-makers and experimentation. In addition, the

CIPFA (2004) provided an additional definition of sustainable development as maintaining the balance between extracting resources to support business activities and preserving natural and environmental systems for future generations. Based on the literature, for this study sustainable development has been defined as the need of a company to make the right decisions about business management in relation to environmental and social performance, while improving the quality of society and the environment where companies operate (e.g. CIPFA, 2004; Lamberton, 2005; Payne & Raiborn, 2001; WCED, 1987). This means a company needs to correctly identify costs related to improving its environmental and social performance to incorporate in sustainability reporting.

As sustainable development is based on policy and reporting, the PAIB needs to gain more understanding about the concepts of sustainability and the challenges in achieving the long-term growth in shareholder value or value for money (IFAC, 2006). Thus, the roles of management accountants should be involved in strategy-setting and providing information to support business strategy related to environmental and social sustainability (Collins, et al., 2011). Management accountants need to understand the challenge in the adoption of sustainability accounting practices (Zvezdov, 2012). Successful corporate management understand how environmental information creates the link between environmental sustainability and eco-efficiency which plays a decisive role in achieving a corporate sustainability in long-term (S Schaltegger & Burritt, 2010).

By focusing on sustainable development, companies need to find new business opportunities that help increases in benefits from producing products and providing services while reducing negative impacts on environment and society. This would also help others become more sustainable. However, in Thailand, there are only few companies that currently are aiming to create sustainable development by having intention to improve economic performance together with environmental friendly and social well-being. And successful companies such as Pruksa

real-estate have been involved in reducing negative impacts on environment and society are tracking and reporting environmental and social performance along with eco-efficiency based on international initiatives (Neungruthai Petcharat and Mihret D, 2016). Thus, it is important that a firm with sustainable development can be successful in building economic, environmental and social performance at the same time.

Economic performance

Over decades, Thailand has been known as one of the most attractive countries in Southeast Asia for foreign investors due to cheaper labour rates and richness in natural resources. Thailand has been claimed as achieving economic success by moving from being a low income country to becoming an upper-income country in less than a generation (The World Bank, 2011). This change has been also identified as remarkable progress in social and economic issues in which Thailand has been one of the countries in the development success (The World Bank, 2011). With this economic success, Thailand has sustained strong growth and impressive reduction in poverty and environmental harms. Economic performance built from sustainable success is the key success of business performance, nowadays. Environmental and social information identified from production and service process is able to support decision-making on reduction in the use of materials, energy, and water (Wright, 2002). In growing economic success, environmental and social information has been required to be integrated in annual reports and voluntary disclosures in order to disclose how companies protect environment and local community where they operate (Pipat Yodprutikarn, 2010). Thai companies have defined corporate sustainability reports as a business strategy that helps create long-term economic development while building positive reputation in the eye of stakeholders and marketplace (Nijkamp & Vreeker, 2000; Suraphan Thawornwong, 2011). Nelson (2005) studied improvements in advertising and marketing of the beer industry in relation to changes in structure, competitive advertising, and measurement of social costs. Nelson found that a company

needed to promote social concerns, including problems of addiction, health, violence and criminal activity, and/or losses of productivity and education (Nelson, 2005). This not only adds value to economic performance, but also creates better opportunities in the marketplace.

Environmental performance

Environmental performance refers to the wise use of materials, energy, and water while having ability to reduce emissions and waste. Some examples of companies in Thailand have employed better techniques, methods and processes to create greater operational outcomes than others in similar circumstance. Those companies create eco-efficiency while leading the way with significant environment-friendliness and social well-being (Epstein, 2008). They are able to have a higher competency in dealing with environmental performance, as well as creating eco-efficiency in the eyes of stakeholders and the public. An example of this is IBM, which has been recognized for its international best practice in using lower volumes of energy and creating less emission. IBM has adopted a variety of management strategies that would potentially reduce energy consumption and GHG intensity of its energy usage (World Resources Institute, 2004). In relation to this, Shell has been identified as a leading edge company for environmental impact costs in terms of the measurement of energy consumption to reduce GHG emissions (Gadenne & Zaman, 2002). Shell has also designed operational control systems to report energy consumption and GHG emission abatement (World Resources Institute, 2004). Another best practice company is Toyota. Toyota is well-known for its environmental management performance, as well as its focus on reduction in energy consumptions and GHG emission abatement. This company is regarded as being environment-friendly by producing cars that create less emission in the air while achieving ISQ 14001 requirements in 2009 (Toyota, 2009). This results in environmental and social information has been required to be integrated in annual reports and voluntary disclosures in order to disclose how companies protect environment and local community where they operate (Pipat Yodprutikarn, 2010).

Environmental and social data in Thai context has therefore appeared in reports in the form of a corporate social responsibility to create image and reputation as environmentally aware organizations. When reporting sustainable success to stakeholders and the public, companies can be claimed as achieving environmental and social sustainability. Costs of environment and social well-being can be captured and managed to seek where reductions in costs and contaminant can be made. In doing this, a sustainable firm creates eco-efficiency while having ability to improve environmental and social performance at the same time. Enhancing their environment and social internal management decision-making in relation to cost efficiency will ultimately balance their economic, social, and environmental performance. It will also result in better relationships with stakeholders when providing triple bottom line reporting to support their demands, thus creating economic performance at the same time. In the following section, social sustainability is provided.

Social performance

Social value added refers to the benefits that a firm provides in terms of social development for the better quality of life of society as a whole. Social value is becoming of increasingly concerns for the social economy in Thailand recently. This is made up of social awareness and voluntary disclosures of a firm that provides for the demands of stakeholders and the public. So, social expenditures are the needs to be identified in the company's disclosures as external costs for the quality of society, employees and the environment (Hazilla & Kopp, 1990). The expenditures are relating to the support of employees' health and safety, training, working conditions, and/or some elements of environmental and natural systems (Bovea & Vidal, 2004). To create social value, companies need to be more aware of taking responsibility for their employees, society, and the environment (Mook, Quarter, & Richmond, 2003). This results in companies most likely providing disclosures to create enhanced images of their organizations in providing accurate cost information for disclosure (Owen & Swift, 2001).

In addition, this becomes the reason why social costs are of significant concern to stakeholders who are increasingly pushing companies to disclose developments in social performance in the form of corporate social responsibility (CSR) reporting (Geibler, Liedtke, Wallbaum, & Schaller, 2006). Frame and Cavanagh (2009) contend that companies analyse benefits to society based on monetary concerns when comparing knowledge and awareness of waste and disposal management programs. The benefits to society were always considered as appropriate operations and an important part of management decisions on measurement of social impacts costs to support social well-being and community development (Frame & Cavanagh, 2009). This shows that social impact costs were analysed to benefit society and/or employees by relying on companies' profits. In this case, the measurement of social costs facilitates companies to not only reduce negative impacts on society and the environment, but also to maximize profits when products are sold at larger volumes (Corson, 2002). This also provides companies with a way to create an enhanced reputation as socially aware organizations concerned with improving quality of life for humans, reducing poverty, and preserving environmental and natural systems (Corson, 2002). Apart from that, as a polluter, a company should not neglect the prevention of negative environmental and natural patterns as they are costs to society as a whole (ICAEW, 2004a). However, ICAEW (2004a) claimed that social costs and benefits appeared to receive less attention when fully costing products to support financial disclosures. At this point, social impacts are only of slight concern compared to environmental issues when providing cost information to support sustainability reporting (ICAEW, 2004a; The Sigma Project, 2003).

It can be seen that companies that make the right decisions about business management in relation to environmental and social performance can improve the quality of society and the environment where companies operate (CIPFA, 2004; Lamberton, 2005; Payne & Raiborn, 2001; WCED, 1987). This means a company needs to correctly identify costs related to improving its environmental and social performance to incorporate in sustainability reporting. They also need to identify costs of environmental factors expended on environmental management, pollution

prevention, and waste treatment costs from internal and external organizations (Gadenne & Zaman, 2002; Gale, 2006; Sendroiu, et al., 2006). These costs are significant in creating cost-saving opportunities, including natural resources efficiency and emission and waste incentives (Gadenne & Zaman, 2002; Gale, 2006; Sendroiu, et al., 2006). In the meantime, social impact costs are collected from expenditures, funding, cash or time donation that bring benefits to employees, the community and society (Mook, Richmond, & Quarter, 2003). The needs of companies are to accurately identify and measure costs of environment to support internal decision-making, thus creating potential investment in environmental efficiency IFAC (IFAC, 2005). Without sustainability accounting, companies are unable to successfully improve their decision-making on sustainable development performance or provide completely accurate cost accounting data to address the demands of stakeholders and the public. Environmental and social performance needs to be improved along with economic when adding value to sustainable development of firms.

Legitimacy theory

Several theories have been developed to examine the behaviours of voluntary corporate disclosures including legitimacy and stakeholder theories that have been widely used to explain the creation of eco-efficiency along with environmental and social performance in a company' reports. Legitimacy theory indicates that companies are keen to maintain their legitimacy within society while fully reporting accounting information in relation to their performance (e.g. environmental and social) (Cormier & Gordon, 2001). The study of Cormier and Gordon found that environmental performance in a company's disclosures more likely related to information costs and benefits, while social disclosures did not. Accounting information in the disclosures allows users to enhance their decision-making on investments and benefits. However, environmental and social disclosures can be used as management decision tools to deal with stakeholders and public interests (Freedmana & Jaggib, 2005). The theory suggests that

companies would voluntarily report on activities relating to improvement in environmental and social performance where they operate (Cormier & Gordon, 2001; Craig Deegan, 2002).

"Legitimacy is a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions" (Suchman, 1995,p. 574). Villiers and Lubbe (2001) and Van der Laan S., (2009) also claimed that legitimacy theory has provided theoretical motivation for social disclosure and the role of accountants in providing such information. The theory encourages sustainable firms to operate within the bounds and norms of their respective citizens of sustainability disclosures while requiring them to be responsive to the change of these bounds and norms at all time (Brown & Deegan, 1998; Sharma & Davey, 2013; Suchman, 1995; Wilmshurst & Frost, 2000). Lindblom (1994, p. 2) defined legitimacy theory as;

> *...a condition or status which exists when an entity's value system is congruent with the value of the larger social system of which the entity is a part. When a disparity, actual or potential, exists between the two systems, there is a threat to the entity's legitimacy.*

According to Brown and Deegan (Brown & Deegan, 1998), legitimacy can be a condition or status that attempt firms to be part of environmental and social improvement when adding sustainable values. Deegan (Craig Deegan, 2002) also claimed that corporate disclosures were aimed to create positive perceptions of external users in which management are significantly involved in presenting operational performance. Legitimacy can be a resource for an organisation's survival that helps create stakeholders' perceptions (Oliver, 1991) as legitimacy firms. This makes it easier for sustainable organizations to attract economic performance as well as being recognized as environmental friendly and social well-being firms (Oliver, 1991; C. D. Villiers & Staden, 2006). Legitimacy has been defined by Suchman (1995, p. 574) as "a generalised perception or assumption that the actions of an entity are desirable or appropriate

within some socially constructed system of norms, values and definitions." In relation to this, Ogden and Clarke (2005, p. 314) highlighted the definition of legitimacy that is as a "perception" or "assumption" on the part of an organization sustainability. Although it may be possessed objectively, it is created subjectively (Ogden & Clarke, 2005) to help represent sustainable development of firms. By implementation of appropriate intuitional norms and routines relating to social norms, firms can be legitimate in the eyes of stakeholders and public thus having ability or power to support their demands (Ogden & Clarke, 2005; Sharma & Davey, 2013)

Legitimacy and/or legislation to encourage corporate responsibility does not stand to significantly alter business behaviour in order to reduce negative impacts on society (Prayukvong & Olsen, 2014). Environmental and social information in CSR reports often appears to create benefits from the increase of corporate image awareness and reputation as a sustainable company (Prayukvong & Olsen, 2014). Legitimacy theory has been mostly cited within the research areas of social and environmental accounting where current management accounting systems are expending on identification and measurement of performance along with eco-efficiency. It however does not appear any real insight into the voluntary disclosures of corporate sustainability. The choice of legitimacy theory is based on the notion that accounting practices for sustainable development and the associated management accountant's role in sustainable development (Mistry, Sharma, & Low, 2014). It is used as a communication mechanism to inform and/ or manipulate the perception of the firm's actions in relation to environmental management mechanism. The social responsibility in sustainable development reporting can be considered as business activities to legitimise firms from the viewpoints of wider community (C. Deegan, 2000). This study discovers current development in management accountant's roles in driving sustainable development of firms. Legitimacy theory is employed in this study to explain a powerful mechanism when providing voluntary sustainability disclosures while providing a vehicle for engaging in understanding sustainability accounting to support their roles. The theory

explains the understanding of management accountant's roles in incorporating environmental and social sustainability in disclosures for management decisions and external users of the reports.

Chapter 3

Research methodology

Approach

This study employs qualitative research methods to collect and analyse data. A set of interview questions is employed to investigate management accountants in relation to their involvement in sustainability strategy-setting. The roles of management accountants in driving sustainable success in proving environmental and social information in annual reports and voluntary disclosures for value creation are explored. Participants are identified based on management accountants playing an important role in identifying and measuring environmental and social management within sustainable firms. Fifty management accountants of Thai-listed firms are targeted as best practices within the case.

Data collection and procedures

Selection of a sampling group

This study employed purposive sampling methods to select sampling group for investigation. Purposive sampling provided a way to conveniently obtain essential information from a specified sampling group (Cavana, Delahaye, & Sekaran, 2001). By selecting fifty management accountants of fifty companies in Thailand, this study first utilized a judgement sampling design to identify management accountant's roles in driving sustainable success. Judgement sampling design assisted in selecting a sampling group that is able to provide required information while involving the choice of subjects (Cavana, et al., 2001). A judgement sampling design was useful when certain questions are created to investigate a specific group of the population.

In addition, this design facilitated selecting a sampling group from a specific population that was difficult to reach (Neuman, 2006). Certain questions sought to individually probe chief accountants, controllers, chief financial officers and management accountants in relation to sustainability accounting practices within organizations. The questions referred to the measurement of environmental and social impact costs, as well as evaluating reductions in these costs and contaminants. This included providing cost information to support decision making and financial reporting, as per the aims of the study. A quota sampling design then was utilized to identify a number of populations (fifty companies) to be interviewed. By combining judgment and quota sampling design, it assisted this study to appropriately identify a sampling group that met the purpose of the study while the number of a sampling group or population chosen became sufficient to be investigated (Cavana, et al., 2001). As a result, the purposive sampling method provided this study with a way to select appropriate case studies for investigation and to gain full information from investigation among sector groups (Neuman, 2006; Patton, 1990; Yin, 2009). Management accountants of fifty companies were selected based on purpose for the study as follow:

Business group/sector	**Number of participants**
1. Food and beverage manufacturing	10
2. Petroleum and chemical product manufacturing	10
3. Machinery and equipment manufacturing	10
4. Construction	10
5. Transports (air and road)	10

Participants were questioned on knowledge of sustainability accounting practices and procedures for environmental and social information. Roles of management accountants in identifying and measuring environmental and social data to incorporate in sustainability disclosures were also investigated. In addition, environmental and social performance in annual reports and CSR disclosures of a sampling group were also discovered to create richness in data

support. Purposive sampling helps this study to conveniently obtain essential information from a specified sampling group (Cavana, et al., 2001). This ensured that a certain number of a sampling group to be studied was based on the purposes and findings of the study. A number of the population appearing in organizations or society became stratified samples which resulted from selecting non-randomly (Cavana, et al., 2001). Data was collected from October 2015 to February 2016.

Data collection

Data was collected based on the use of in-depth interview with management accountants of fifty companies in Thailand from metal product manufacturing, food, beverage and tobacco manufacturing, textile, clothing, footwear and leather manufacturing, petroleum, chemical and associated product manufacturing, machinery and equipment manufacturing, electricity, gas and hot water supply, construction, retail trade, except motor vehicles and motorcycles, and air transport. A set of interview instruments was divided into two sections. In the first section, the questions seek to elicit information about company profiles and participants' backgrounds including their education and work experiences. In the second section, questions are relevant to the roles of management accountants in sustainable strategies in providing financial and non-financial information for value creation. Targeted information is relevant to the environmental and social performance indicators provided in annual reports and sustainability disclosures for management decision and the demands of stakeholder group. This includes management intentions to involve in sustainability strategy-setting roles when driving as collaborators with a company to report three areas of performance – economic, environment, and social development.

Data analysis

Theoretical proposition strategies were employed to analyse management accounting practices along with analysis procedures. As the main objectives and design of propositions were based on case study, theoretical proposition strategies have been used to test the case studies relying on propositions (Yin, 2003). As this study posed propositions based on case study, theoretical proposition strategies helped in data analysis to create a deeper understanding of existing business activities (Yin, 1993, 2009). Theoretical proposition strategies are considered appropriate to analyse management accounting practices along with benchmarking model. Atlas.ti software was employed to analyse qualitative data thus avoiding complex phenomena hidden in unstructured data within benchmarking process. Data collected from 50 cases were identified and allocated to each of the themes (e.g. environmental, social indicators, and economic). A set of environmental indicators defined as a theme includes biodiversity, effluences and wastes, emissions, energy, environmental grievance mechanisms, material, and product and services. A theme of social indicator refers to anti-corruption, customer health and safety, employment, occupational health and safety, human rights, local communities, training and education. A set of economic indicators is cost saving, energy reduction, and waste and emission abatement. The number of words from in-depth interview (50 participants) was counted to measure level of information provided by management accountants. Large volumes of texts collected from in-depth interviews were kept tracks of all notes and annotations codes or memos before allocating to each code within five steps. This was aimed to seek the roles of management accountants relating to driving corporate sustainability successfully as best practices. The appropriate implementation of the indicators of the GRI guidelines also allowed best practices of management accountants' roles in driving sustainable success while having ability to fully provide environmental and social information in annual reports and voluntary disclosures. In addition, data analysis was identified based on the Corporate Social Responsibility Guidelines of SET in 2008 including Respect of human rights and fair treatment of labour, consumer responsibility,

participation in social development, and environmental conservation (Suttipun & Stanton, 2012) as themes. Environmental and social performance reported in the themes enables data accuracy not only enhancing decision-making but also improving sustainability reporting disciplines to add shareholder value in the eye of stakeholder group.

Chapter 4

Results of the study and discussions

This study examined management accountant's role in driving sustainable successes of Thai-listed companies. Qualitative research methods were employed to collect and analyse data. Participants (management accountants) were selected from five business sectors including food and beverage manufacturing, petroleum and chemical product manufacturing, machinery and equipment manufacturing, construction, and transports (air and road) based on the purpose of the study. In-depth interviews were conducted and questions were set based on their roles in environmental and social responsibility reporting procedures and practices.

Results of the analysis

Management accountant as a collaborator with a company drives to disclose environmental friendly and socially aware organizations in sustainability reporting when maximizing profits in market. Participants were asked about their backgrounds and involvement in environmental and social identification and measurement along with sustainability reporting practices. This includes current accounting system, types of sustainability disclosure, sustainability accounting training, international measure or guidelines (e.g. ISO:140001 Environmental protection and Global Reporting Initiatives (GRI)), and management accountant's role in driving sustainable success. Table 2 shows that fifty participations of food and beverage (10), petroleum and chemical product (10), machinery and equipment (10), construction (10), and transports (air & road) (10)) indicated that current accounting systems of a company provided financial and non-financial information in the reports based on the International Financial Reporting Standard (IFRS). Participants never attended any training relating to sustainability accounting concepts. Most sampling companies employed concepts and guidelines of international measures such as ISO and/or GRI. The results indicated that transport sectors (9)

were mostly paying attention to attend GRI training relating to identification of environmental and social indicators to incorporate in sustainability reports, followed by construction (9), petroleum and chemical (4), food and beverage (3), and machinery equipment (2). Management accountants of food & beverage, petroleum & chemical, machinery & equipment, and construction were all involved in driving sustainable successes. Meanwhile, only seven companies of transport sector that management accountants were driving as a collaborator in reporting environmental and social sustainability of firms (Table 2).

Table 2: Background information of environmental and social responsibility reporting

Participants = 50	**Industry group/sector**				
	Food & beverage	Petroleum & chemical	Machinery & equipment	Construction	Transports (air & road)
	10	10	10	10	10
Current accounting system	Based on accounting standard				
Types of sustainability disclosure	Annual reports and CSR disclosures				
Sustainability accounting training	None				
ISO:140001Environmental protection	7	5	3	2	3
Global reporting initiatives	3	4	2	8	9
Management accountant's role in driving sustainable success	10	10	10	10	7

This study employed coding analysis methods to analyse data from in-depth interviews. Numbers of words were classified into each theme of indicators of the Global Reporting Initiatives (GRI). The results to test P1 that *Management accountants collaborate with a company in identifying environmental and social performance to incorporate in sustainability report thus*

driving sustainable development of firms, show that management accountant collaborate with a company in driving sustainable development of firms. Environmental grievance mechanisms had the highest number of total words (959), followed by Energy (796), and effluences and wastes (750). Meanwhile, emissions had the lowest number of total words (154). Environmental information in relation to material (557), Product and services (470), and biodiversity (444) were incorporated in sustainability reporting (Table 3). Table 3 also shows that local community development was reported as priority (681), followed by employment indicators (564). Meanwhile, customer health and safety (274), occupational health and safety (196), Anti-corruption (174), and training and education (166) were disclosed moderately (Table3). Management indicated that environmental and social information identified sustainability reports along with sustainability strategies in driving sustainable successes. Companies aimed to report environmental improvement and social well-being thus promoting sustainability achievement in the environment which they operated.

Table 3: Management roles in environmental and social sustainability

	Business sectors					
Sustainability reporting	**Food and beverage (n=10)**	**Petroleum and chemical product (n=10)**	**Machinery and equipment (n=10)**	**Construction (n=10)**	**Transports (air and road) (n=10)**	**Total**
Environmental performance:						
Biodiversity	116	159	65	66	38	**444**
Effluences and Wastes	461	269	8	8	4	**750**
Emissions	76	55	8	8	7	**154**
Energy	514	179	6	21	76	**796**
Environmental Grievance Mechanisms	258	269	162	157	113	**959**
Material	515	23	6	4	9	**557**
Product and Services	181	112	98	53	26	**470**
Accum. Wordcount	**2121**	**1016**	**353**	**317**	**273**	**4080**
Total Wordcount	**574**	**500**	**431**	**385**	**294**	**2184**
Relative Count (%)	**369%**	**213%**	**81%**	**82%**	**92%**	**186%**
Social performance i:						
Anti-corruption	49	81	18	21	5	**174**
Customer Health and Safety	24	140	76	28	6	**274**
Employment	440	61	22	33	8	**564**
Occupational Health and Safety	24	75	60	31	6	**196**
Human Rights	73	18	107	21	0	**219**
Local Communities	253	103	107	171	47	**681**
Training and Education	22	90	4	43	7	**166**
Accum. Wordcount	**885**	**568**	**394**	**348**	**79**	**2274**
Total Wordcount	**574**	**500**	**431**	**385**	**294**	**2184**
Relative Count (%)	**154%**	**113%**	**91%**	**90%**	**76%**	**104%**

This study further analysed how management accountants fully identify and capture environmental and social performance to incorporate in sustainability reports. Environmental and social performance in the reports was compared with the indicators of the Global Reporting Initiatives (GRI) guidelines. The results to test P2, *Management accountants capture and identify environmental and social information along with the knowledge of the Global Reporting Initiatives (GRI) guidelines*, reveal that environmental information and social information in sustainability reports were relevant to the indicators of the GRI guidelines. Based on the results across the sectors, environmental information of Food and Beverage sector (369%) was dominantly incorporated in sustainability reports, followed by Petroleum and Chemical Products (213%), Transport (92%), Contraction (82%), and Machinery and Equipment (81%), respectively (Table3). Environmental information was identified along with the indicators of the GRI as a measurement theme. The results in Table 4 shows that Environmental grievance mechanism (544) had the highest number of total words, followed by product and services (270), biodiversity (177), and effluences and wastes (137), respectively. In contrast, energy (52), emissions (36), and material (36) were disclosed as little as possible comparing with the indicators of the GRI (Table 4).

Table 4: Environmental performance in the reports and the indicators of the GRI guidelines

	Environmental indicators of the GRI							
	Biodiversity	Effluences and Wastes	Emissions	Energy	Environmental	Grievance Mechanisms	Material	Product and Services	**Accum. Wordcount**
P13: Question_2.docx	177	137	36	52	544	36	270		**1252**
Accum. Wordcount	**177**	**137**	**36**	**52**	**544**	**36**	**270**		**1252**

Accum. Wordcount	**1252**
Total Wordcount	**1104**
Relative Count (%)	**113%**

Furthermore, social performance indicators were reported across the sectors, Food and Beverage (154%) was dominantly incorporated in sustainability reports, followed by petroleum and chemical products (113%), machinery and equipment (91%), construction (90%), and transport (76%), respectively (Table3). Overall results reveal that customer health and safety (1007) was reported to have the highest number of words, followed by anti-corruption (879). In contrast, employment (98), training and education (46), and human rights (37) had lower number of words reported along with the indicators of the GRI guidelines. Local communities and occupational health and safety were incorporated in the reports along with the GRI guidelines, with 342 and 121of total words (Table 5).

Table 5: Social performance in the reports and the indicators of the GRI guidelines

	Social indicators of the GRI							
	Anti-corruption	Customer Health and Safety	Occupational Health and Safety	Human Rights	Local Communities	Product and Services	Training and Education	**Accum. Wordcount**
P13: Question_2.docx	879	1007	98	121	37	342	46	2530
Accum. Wordcount	**879**	**1007**	**98**	**121**	**37**	**342**	**46**	**2530**

Accum. Wordcount	**2530**
Total Wordcount	**1104**
Relative Count (%)	**229%**

This study further analysed where environmental and social performance in the reports was employed to support decision-making and dealing with stakeholder engagement at the same time. The results from testing P3, *Management accountants provide environmental and social information to enhance decision-making at boardroom level dealing with stakeholder engagement in environmental and social matters*, show that environmental and social information was aimed to support management decisions at boardroom level. In order to deal with stakeholder engagement, environmental information was captured to ensure environmental sustainability was achieved. Based on the Corporate Social Responsibility Guidelines of SET in 2008, the results show that management accountants were driving as a collaborator with a company to report environmental and social responsibility in the form of Respect of human rights and fair treatment of labour, Consumer responsibility, participation in social development, and environmental

conservation. Participants indicated that environmental conservation (1154 of total words) was the main priority incorporated in the report, followed by respect of human rights and fair treatment of labour (762), Consumer responsibility (332), and participation in social development (297), respectively. Environmental and social information identified in the reports aimed to satisfy information needs of stakeholders (Table 6).

Table 6: Environmental and social indicators for decision-making and concerns of stakeholders

Indicators	
Environmental conservation	1154
Consumer responsibility	332
Participation in social development	297
Respect of human rights and fair treatment of labour	762
Accum. Wordcount	**2545**
Total Wordcount	**494**
Relative Count (%)	**515%**

This study furthers analysed management accountants' roles in driving sustainable success of Thai-listed firms in Thailand. The results from testing P4, *Management accountants are ideally placed to provide the alignment mechanisms to add sustainable value in economic, environmental and social performance*, indicate that environmental and social information in the reports along with economic performance to support demands of stakeholders. Based on the results, social performance (e.g. *Quality of life of employees and community*) was importantly incorporated in sustainability reporting (45 of total words), followed by Environmental performance (41) (e.g. *Waste treatments, Less resources of usages, and Lower level of emission and carbon Environmental improvement*), and economic performance (e.g. *Cost saving, Energy reduction, Waste and emission abatement*) (14), respectively (Table 7).

Table 7: Economic, environmental, and social performance in sustainable success reporting

	Business sectors				
Sustainable achievement	**Food and beverage (n=10)**	**Petroleum and chemical product (n=10)**	**Machinery and equipment (n=10)**	**Construction (n=10)**	**Transports (air and road,) (n=10)**
Economic performance:	31	14	7	9	**14**
Cost saving					
Energy reduction					
Waste and emission abatement					
Environmental performance:	76	38	8	32	**41**
Waste treatments					
Less resources of usages					
Lower level of emission and carbon					
Environmental improvement					
Social performance:	210	42	52	79	**45**
Quality of life of employees and					
community					
Accum. Wordcount	**317**	**94**	**67**	**120**	**100**
Total Wordcount	**383**	**274**	**150**	**150**	**157**
Relative Count (%)	**82%**	**34%**	**44%**	**80%**	**63%**

Discussion of the results

Management accountants collaborate with a company in identifying environmental and social performance to incorporate in sustainability report thus driving sustainable development of firms

Previous studies (e.g. Byrne & Pierce, 2007; Cullen & Whelan, 2006; Hill, McAulay, & Wilkinson, 2006; Zvezdov, 2012) claimed that management accountants were expected to combine financial expertise and business acumen. They were required to provide financial and non-financial information to enhance management decisions when dealing with

stakeholder engagement in environmental and social matters. Environmental and social information identified from production and service processes aimed to be used as a business tool to meet corporate sustainability goals. Data accuracy on environmental and social performance was employed to guide critical business decisions and drives strong business performance. This study found that management accountants (Participants) had not much knowledge about sustainability accounting (see Table 2). They aimed to collaborate with companies in identify environmental and social information from production and services processes. Environmental grievance mechanisms, energy, and effluences and wastes were the dominant areas of reporting with the higher numbers of total words (959, 796, and 750). It is interesting to note that Emissions were identified very little (154) when driving sustainable successes. Meanwhile, use of material, product and services, and Biodiversity were identified as environmental information incorporated in the reports with significant number of total words (557, 470, and 444). For social information, local community development was reported as priority (681), Employment indicators (564), Customer Health and Safety (274), Human Rights (219), occupational Health and Safety (196), anti-corruption (174), and training and education (166) were significantly identified in the reports. Management accountants (Participants) described their roles in capturing environmental and social data as follows:

Food and beverage sector#

'We captured environmental and social data to promote the participation of the community and environmental development from water consumption, waste and emission reductions, use of resource, environmental improvement, and social development such cash donation, (case 1)

'I aimed to collect data from energy consumption management, use of national resources, GHG emission reductions, biodiversity, environmental improvement, and social development such donation in cash' (case 4)

‘We created a biogas tank and waste water from the fresh produce at the maximum 2160 tonnes / day, Production and use of biogas gesture, Renewable energy, biomass, Electricity to supply and reported in the sustainability disclosure. We have a high quality dry organic fertilizer, soil in the palm of the company and use reused waste water, reduce pollution, insect infestation, and environmental conservation to incorporate in the disclosure. We reported human right, quality of life of employees on community development (case 5)

‘I provided environmental prevention, employee performance, healthcare and safety in workplace, community development, and donation in kind of cash to incorporate in the sustainability reports’ (case 9)

Petroleum and chemical product#

‘We collected environmental data from environmental protections and energy conservations’ (case 1)

‘We identified environmental data from investment in renewable energy and pollution reductions, renewable energy from solar and wind power energy from biomass reduce pollution, air pollution in relation to the global warming production of steel towers, and cash donation’ (case 3)

‘I aimed to report water conservation, energy consumption, environmental protection waste management and waste disposal, and donation in kind of cash’ (case 5)

‘We reported energy conservation, environmental management program, risk management of drought, and emission reduction’ (case 6)

‘I identified healthcare and safety at workplace, renewable energy, environmental performance, social responsibility, quality of life of employee, human right, and healthcare and safety to incorporate in the sustainability reports’ (case 7)

Machinery and equipment#

‘We collected environmental and social data from the environmental protection, air quality, wind speed and direction, soil, waste water treatment plant, noise level around, occupational health and safety, and public relations (case 2)

‘We collected environmental and social data from the environmental preservations, energy preservation, energy reduction, customer responsibility, social and community development, and cash donation and scholarship (case 3)

‘We collected environmental and social data from biodiversity management – animal habitats, environmental conservation from production, community development, and health and safety at workplaces (case 4)

‘We captured environmental and social data from the use of resources, community development, in-house environmental training, environmental performance and safety of employee, customer responsibility, and anti-corruptions’ (case 5)

Construction#

‘We identified environmental management, quality of life of employees and community to incorporate in sustainability reports’ (case 1)

‘We reported effective energy conservation management and environmental management’ (case 4)

‘We collected environmental and social data from product design, energy savings, environmental friendly systems, better environment for social, community and customers (case 6)

‘We reported green environment and community development’ (case 7)

‘We reported energy savings, biodiversity, employment, occupational health and safety, training, human right, community, public policy, health and safety of customers’ (case 8)

Transports (air and road)#

‘We provided environmental expenses, social development, and donation for local community supports (case 1)

‘We identified carbon emission in the air in incorporate in the sustainability reports’ (case 5)

‘We reported garbage collection and education support for community’ (case 6)

‘I am involved in setting sustainable development policy and procedures’ (case 9)

‘We mainly identified environmental and social management and policy and procedures to incorporate in the sustainability reports’ (case 10)

It can be seen that management accountants were aiming to collaborate with a company to promote sustainability achievement thus promoting environmental friendly and social well-being in the sustainability reports. Environmental and social information incorporated in reports was employed to promote how a company improved environmental sustainability and quality of life of society and community in which it operates. This is consistent with legitimacy theory that a company is keen to maintain its legitimacy within society when disclosing environmentally and socially aware organizations (Cormier & Gordon, 2001). Management accountants can play an important role in representing sustainability achievement of firms when incorporating environmental and social expenditures in sustainability reports. International measure and/or guidelines were mentioned to help in identifying and collecting environmental and social data incorporated in the reports.

Management accountants capture and identify environmental and social information along with the knowledge of the Global Reporting Initiatives (GRI) guidelines

Institute of Management Accountants (2008) stated that over a thousand firms had used the indicators of the GRI and its framework as a basis for publishing annual reports on sustainability. GRI’s framework helps sustainable firms to have more ability to promote how they achieve sustainability targets. Environmental and social indicators of the GRI guidelines provide sustainable companies with a way to report accurate information on environmental and social performance in both mandatory and voluntary disclosures. As environmental and social indicators

of the GRI were employed as analysis themes, environmental grievance mechanisms were reported in relation to the guidelines at the highest number of total words, followed by product and services (270), biodiversity (177), and effluences and wastes (137), respectively. Management accountants in this study paid attention to providing environmental information in relation to reductions in negative impacts on environment. Use of energy (52) and material (36) were identified not far from the GRI including emissions (36). For social information, customer health and safety (1007) was fully identified along with the indicators of the GRI, as well as anti-corruption (879). This helped sustainable companies to promote social well-being and improving quality of life of society as well as of customers and stakeholders. In addition, local communities (342), and occupational health and safety (121) were identified less than expected by the study. Meanwhile, social information in relation to employment (98), training and education (46), and human rights (37) appeared to be biased in applying the indicators of the GRI. Participants described their roles in reporting environmental and social performance indicators relating to the GRI guidelines as follows:

> **Food and beverage sector#**
>
> '……water consumption, waste and emission reductions, use of resource, environmental improvement, and social development such as cash donation……(case 1)
>
> '…….energy consumption management, use of national resources, GHG emission reductions, biodiversity, environmental improvement, and social development of which donation in cash were reported in the sustainability disclosures' (case 4)
>
> 'We reported waste water, use of biogas gesture, renewable energy, biomass, use of electricity, reused waste water, reduction in pollution, and environmental conservation, human right, quality of life of employees, and community development…. (case 5)
>
> '….environmental prevention, employee performance, healthcare and safety in workplace, community development, and donation in kind of cash were incorporated in the sustainability reports' (case 9)

Petroleum and chemical product#

'….environmental data from environmental protections and energy conservations was reported' (case 1)

'We disclosed environmental and social performance indicators from investment in renewable energy and pollution reductions, renewable energy solar and wind power energy from biomass reduce pollution, air pollution in relation to the Global warming production of steel towers, and cash donation' (case 3)

'….water conservation, energy consumption, environmental protection, waste management and waste disposal, and donation in kind of cash were mainly disclosed' (case 5)

'We reported energy conservation, environmental management program, risk management of drought, and emission reduction' (case 6)

'We disclosed healthcare and safety at workplace, renewable energy, environmental performance, social responsibility, quality of life of employee, human right, and healthcare and safety' (case 7)

Machinery and equipment#

'……environmental protection, air quality, wind speed and direction, soil, waste water treatment plant, noise level around, occupational health and safety, and public relations were incorporated in the sustainability reports' (case 2)

'We reported environmental preservations, energy preservation, energy reduction, customer responsibility, social and community development, and cash donation and scholarship' (case 3)

'We incorporated biodiversity management – animal habitats, environmental conservation from production, community development, and occupational health and safety at workplaces in the sustainability reports' (case 4)

'We reported use of resources, community development, in-house environmental training, environmental performance and safety of employees, customer responsibility, and anti-corruptions' (case 5)

Construction#

'……environmental management, quality of life of employees and community to incorporate in sustainability reports were incorporated in the sustainability reports' (case 1)

'We reported effective energy conservation management and environmental management' (case 4)

'We disclosed product design, energy savings, environmental friendly systems, better environment for social, community and customers (case 6)

'We reported green environment and community development' (case 7)

'We reported energy savings, biodiversity, employment, occupational health and safety, training, human right, community, public policy, health and safety of customers' (case 8)

Transports (air and road)#

'….all sources of environmental expenses, social development, and donation for local community supports were disclosed in the sustainability reports' (case 1)

'We reported carbon emission in the air to incorporate in the sustainability reports'

(case 5)

'We reported garbage collection and education support for community' (case 6)

It can be seen that environmental and social performance indicators in the sustainability reports were consistent with the indicators of the GRI guidelines. Based on the results, environmental performance in the reports were relevant to the indicators of the GRI guidelines including environmental grievance mechanisms, product and service, biodiversity, effluences and waters, energy, material, and emissions. In addition, social information in the reports was classified into indicators of the customer health and safety, anti-corruption, local communities, occupational health and safety, employment, training and education, and human rights. The results are consistent with the choice of legitimacy theory relating to the notion that accounting systems for sustainable development and the associated management accountant's role in sustainable development (Mistry, et al., 2014). Legitimacy theory explains that accountants

provide environmental and social information to incorporate in sustainability reports as their role (Van der Laan S., 2009; C. J. D. Villiers & Lubbe, 2001). Thus, in providing environmental and social performance in the sustainability reports, management accountants are intending to create data accuracy for a better a communication mechanism to the internal and external users. Environmental and social information in the sustainability reporting can be considered as business activities to legitimise firms from the viewpoints of wider community (C. Deegan, 2000). Management accountants should play an important role in providing information to not only enable more effective management decision but also satisfy information needs to stakeholders.

Management accountants provide environmental and social information to enhance decision-making at boardroom level dealing with stakeholder engagement in environmental and social matters

At boardroom level, a confluence of corporate executives evaluates sustainability disclosures when using environmental and social information to support decision-making and dealing with stakeholders' concerns (Sullivan, 2009). With this circumstance, management accountants are involved in identifying and measuring environmental and social information to enhance decision-making on reduction in negative impacts on environment and society. At boardroom level, environmental improvement and social responsibility is discussed across operational management covering economic, social, and environmental effects. Based on the results, management accountants played a significant role in managing environmental and social performance and incorporating the information in sustainability reporting. Environmental and social information was reported in the form of Corporate Social Responsibility Guidelines of SET - consumer responsibility (1154), respect of human rights and fair treatment of labour (762), environmental conservation (332), and participation in social development (297). Environmental and social responsibility of sampling firms aimed to support decision-making and reporting purposes.

At decision-making process on sustainable development, environmental and social information can be used as accounting data to reduce negative impacts on environment, society, and community where a company operates (IFAC, 2013). IFAC (2006, 2013) claimed that sustainable development of firms needed environmental and social information as a better guidance to support decision-making on sustainability achievements and external reporting purposes. In this regard, accountancy professions such management accountants need to create financial and economic performance by providing more accurate data on environmental and social factors (IFAC, 2006, 2013). Participants indicated environmental and social performance indicators were employed to enhance more effective decision-making at boardroom levels when dealing with stakeholders' concerns as follows:

Food and beverage sector#

Consumer responsibility:	'…..enabled to reduce consumers Issue' (case 5)
Environmental conservation:	'….studying and conserving the nature for the youth who are in need of bringing good thing back to our nature for the sustainable future' (case 1)
	'….continuous achievement in environmental management systems linked to the management of food safety' (case 2)
	'….water quality standards a sewage system caused by advanced manufacturing processes. Energy savings in the system The conservation of existing trees and plant more' (case 9)
Participation in social development:	'…community involvement and development' (case 5)
	'…..and serves to support and follow up to ensure that the framework in terms of social

	responsibility has been carried out continuously' (case 10)
Respect of human rights and fair treatment of labour:	'….human rights and labour practice' (case 5) '…and occupational health and safety' (case 6)
Petroleum and chemical product#	
Consumer responsibility:	
Environmental conservation:	'…power green projects, energy conservation resource management, land protection' (case 1) '…investment in renewable energy solar and wind power energy from biomass, GHG reduction program Pollution reduction projects' (case 3) '…the development, community, society and the environment' (case 4) '…resource management, water consumption, air quality management, waste management, energy conservation, biodiversity, and employee development' (Case 9)
Participation in social development:	'..environmental improvement for community' (case 4) '…social and community support' (case 9) '…social and community development' (case 10)
Respect of human rights and fair treatment of labour:	'…safety management program and occupational healthcare and safety' (case 8) '…occupational health and safety, which is….. the main policy of the organization and establish director on several levels of

	Environmental Policy, and Health and Safety (EHS Steering Committee)' (case 9)
Machinery and equipment#	
Consumer responsibility:	'….customer responsibility' (case 3)
	'…product quality control to reduce environmental impacts' (case 8)
Environmental conservation:	'…environmental protection activities' (case 1)
	'…standard safety, health and environment at work' (case 2)
	'….Environmental training and environmental conservation' (case 5)
	'…implementation of measures to change the water cooler (Absorption Chiller) at the water cooler…. High efficiency (Electric Chiller) of the working group on the energy conservation' (case 6)
Participation in social development:	'….social and community development' (case 4)
Respect of human rights and fair treatment of labour:	'….and healthcare and workplace safety' (case 5)
Construction#	
Consumer responsibility:	'…improve customer satisfactory' (case 1)
Environmental conservation:	'…and environmental improvement' (case 1)
	'…environmental prevention' (case 3)
	'Resource efficiency and educating employees on environmental issues, technology development AirPlus' (case 6)
	'…green strategy environmental and

	community development' (case 7)
	'…..energy savings' (case 8)
	'…..use of resource efficiency and environmental prevention' (case 9)
Participation in social development:	'….quality of life of society and community' (case 1)
	'….social support' (case3)
	'…..community development' (case 7)
	'…quality of life of society and community' (case 8)
	'……community improvement'(case 9)
Respect of human rights and fair treatment of labour:	'…in-house training for employees and competency training program' (case 3)

Transports (air and road)#

Consumer responsibility:	'…safety development for consumers thus remaining safety and environmental concerns and social responsibility along with all concerns of stakeholders' (case 7)
	'…..customers satisfaction' (case 9)
Environmental conservation:	'…….green Airport and Green Air'(case 1)
	'…safety development for ……. environment' (case 7)
	'……waste management biodiversity management, sewage and wastes management' (case 8)
	'…operation of fineness, waste management and emissions abatement, garbage disposal, and noise control' (case 10)

	'….biodiversity, waste and disposal waste' (case 8)
	'…..water recycle system, sustainable material management, voluntary carbon offset' (case 9)
	'…waste reductions , garbage disposal' (case 10)
Participation in social development:	'……..green projects for community development' (case 1)
	'…anti-corruption' (case 8)
	'…community improvement' (case 9)
	'…quality of life …. of community' (case 10)
Respect of human rights and fair treatment of labour:	'…safety development for …., employees' (case 7)
	'….health care and safety, human right'(case 8)
	'…health care and safety of employees, whistle blower' (case 9)
	'….quality of life of employee' (case 10)

Whilst stakeholder are looking for ways to invest in environmental friendly and socially aware firms, management accountants play a significant role in collaborating with a company to promote sustainability achievement in markets. Environmental and social information in reports supports management decision when dealing with concerns of stakeholders in environmental and social matters. Legitimacy theory explains that environmental and social disclosures can be used as management decision tools to deal with stakeholders and public interests (Freedmana & Jaggib, 2005). Sustainable companies need to voluntarily report on environmental friendly and socially aware organisation when maximizing profits in markets (Cormier & Gordon, 2001; Craig Deegan, 2002). Such information needs to be incorporated in the reports along with economic improvement when promoting three areas of performance – economic, environment, and social well-being. Thus, by implementation of institutional norms

and routines, firms can be legitimate in the eyes of stakeholders as having ability or power to support their demands (Ogden & Clarke, 2005; Sharma & Davey, 2013)

Management accountants are ideally placed to provide the alignment mechanisms to add sustainable value in economic, environmental and social performance

Management accountants acting as accounting professionals need to drive as a collaborator in providing environmental and social information to incorporate in sustainability report (Institute of Management Accountants, 2008). They need to create data accuracy (Institute of Management Accountants, 2008). Management accountants of Thai-listed companies (participants) indicated that social performance (45) in the reports mainly promoted *Quality of life of employees and community* of firms. Environmental performance (41) represented how sustainable companies improved environmental problems in terms of *Waste treatments, Less resources of usages, and Lower level of emission and carbon.* Companies aimed to promote economic performance (14) in relation to *Cost saving, Energy reduction, Waste and emission abatement*. Companies aimed to disclose sustainable success in three areas of performance – economic, environmental, and social development which is related to making the right decisions, rather than those presented in reports (Lamberton, 2005). Sustainable success can be a confluence of business opportunities from compelling operational outcomes and enhancing competitive advantage in 'green' markets when providing environmental and social responsibility along with eco-efficiency (Sullivan, 2009). Some examples of how participants as a collaborator are driving to promote environmental, social, and economic performance for sustainable development of firms are shown below:

Food and beverage sector#

Social performance: *Quality of life of employees and community*	'….quality of life of employee and healthcare…. and safety environment' (case 3)

	'…healthcare and safety' (case 6) '….a security policy, health and environment in the workplace by recognizing the importance of health and environment in the work of the staff' (case 9)
Environmental performance: *Waste treatments, Less resources of usages, and Lower level of emission and carbon Environmental improvement*	'…..environmental improvement from production process and environmental improvement' (case 6) '…..improved sewage treatment plant's efficiency' (case 7) '……new technologies to reduce waste material into compost, organic fertilizer' (case 7) '..conservation of existing trees and plant more and planting grass to prevent soil erosion' (case 9)
Economic performance: *Cost saving, Energy reduction, Waste and emission abatement*	'…conservation of energy and resources by reducing the use of private agencies and the water is reused' (case 2) '……energy savings in the system' (case 9)
Petroleum and chemical product#	
social performance: *Quality of life of employees and community*	'….community development' (case 1) '….safety management program and healthcare and safety' (case 7)
Environmental performance: *Waste treatments, Less resources of usages,*	'..GHG reduction' (case 2) '…environmental protection and

and Lower level of emission and carbon Environmental improvement	pollution reduction' (case 3)
Economic performance: *Cost saving, Energy reduction, Waste and emission abatement*	'…..energy saving' (case 1) '…..energy conservation' (case 2) '….renewable energy, solar and wind power, energy from biomass' (case 3) '….energy conservation' (case 7)
Machinery and equipment#	
Social performance: *Quality of life of employees and community*	'…..determining safety measures for delivery both in the local and outside community, transportation. Reduce certain level of accidents from transportation,…healthcare and workplace safety, community Reduce the community's concerns on the environment' (case 4) '….safety of employee, Customer responsibility, and Anti-corruptions' (case 5) '….product quality control to reduce environmental impacts' (case 6) '…..quality of life of employees and community' (case 10)
Environmental performance: *Waste treatments, Less resources of usages, and Lower level of emission and carbon Environmental improvement*	'…..reforestation' (case 2) '…animals' habitats; represent good barriers between factory and community (case 4)
Economic performance: *Cost saving, Energy reduction, Waste and*	'…..conservation of resources and energy wisely and efficiently' (case 5)

emission abatement	'…..reducing energy, water, use of solvents, and use of paper. Implementation of measures to change the water cooler (Absorption Chiller) at the water cooler. High efficiency (Electric Chiller) of the working group on the energy conservation' (case 6)
Construction#	
Social performance: *Quality of life of employees and community*	'…..quality of life of society and community including cleaning school voluntary and stationary donation' (case 1) '…quality of life of community - child protection foundation' (case 2) '…..donation to community - building jobs and career training' (case 4) '….social improvement activities – scholarships, natural disaster victims, and community supports' (case 5) '….volunteer activities, improving school buildings, and mangrove planting volunteers….' (case 6) '…social and community development - supporting education to communities' (case 10)
Environmental performance: *Waste treatments, Less resources of usages, and Lower level of emission and carbon, and environmental improvement*	'.....preventive maintenance, machinery efficiency assessment, re-commissioning' (case 4) '….waste water management, energy

	savings, air management centre, resource management recycled (case 8)
Economic performance: *Cost saving, Energy reduction, Waste and emission abatement*	'…..energy savings' (case 2) '…..effective energy conservation' (case 4) '…..improve product design for energy savings' (case 6) '…...energy savings' (case 8)
Transports (air and road)#	
Social performance: *Quality of life of employees and community*	'….attain a better quality of life as to share benefits with the community and society' (case 2) '….improve quality of life of community' (case 6)
Environmental performance: *Waste treatments, Less resources of usages, and Lower level of emission and carbon Environmental improvement*	'…..reduce air pollution, waste, and carbon emissions' (case 1) '…..reduce pollution, environmental friendly, less environmental emissions of carbon dioxide levels'(case 5) '….reduce negative impacts on environment' (case 6) '….waste reductions and Garbage disposal'(case 10)
Economic performance: *Cost saving, Energy reduction, Waste and emission abatement*	'..…water conversation' (case 2) '…..reduces energy consumption per person' (case 5)

Successful corporate management needs to understand how environmental and social information creates the link between sustainability and eco-efficiency, which plays a decisive role in achieving corporate sustainability in long-term (Schaltegger & Burritt, 2010). Management accountants act as collaborators with a company to maintain the connection between societal and economic progress that link with business strategies and a corporate social responsibility (CSR). Economic, environmental and social performance incorporated in sustainability disclosures enables firms to create value for shareholders. Legitimacy theory explains that sustainable development of firms operates within the bounds and norms of their respective citizens of sustainability disclosures (Brown & Deegan, 1998; Sharma & Davey, 2013; Suchman, 1995; Wilmshurst & Frost, 2000). Sustainability disclosure can be involved in a business strategy of a company when taking environmental and social issues into account (Prayukvong & Olsen, 2014). Environmental and social improvement disclosed in sustainability reports along with economic performance creates benefits from the increase of corporate image awareness and reputation (Prayukvong & Olsen, 2014) while subjectively representing sustainable development of firms (Ogden & Clarke, 2005) at the same time.

Chapter 5

Conclusion, Contribution, Limitations, and Recommendation for Future Research

Management accountants' roles as a collaborator in driving sustainable development of firms provide environmental and social performance in sustainability reports to enhance management decision and satisfy information needs to stakeholders. Environmental and social information in reports enables promotion of sustainability achievement in three areas of economic, environmental, and social performance for value creation in the eye of stakeholders.

Conclusion

As the demands have been placed on management accountants to significantly act as collaborators to enhance sustainable development of firms, environmental and social information needs to be incorporated in both mandatory and voluntary disclosures for value creation (Collins, et al., 2011). Thai-listed companies are aiming to report environmental and social performance along with economic improvement to satisfy information needs of stakeholders. Management accountants are expected to create data accuracy on environmental and social performance to not only support management decisions but also external users. In this regard, *management accountants need to collaborate with a company in introducing sustainability reporting practices while driving sustainable development of firms* (P1). Based on the results from the study, participants indicated that environmental information in the themes of environmental grievance mechanisms, effluences and wastes, material product and services, and biodiversity were incorporated in sustainability reporting. Whilst, emission pollutions appeared to attract bias for incorporate in the reports. Environmental information in reports represented how companies were able to reduce negative impacts on the environment when promoting environmental sustainability

in markets. Management accountants indicated that social information in themes of Local Communities and Employment was mainly incorporated in sustainability reporting to promote quality of life of society and the community in which a company operates. This seemed to represent how sustainable companies took social well-being into account. Social information in relation to the Customer Health and Safety, Human Rights, Health and Safety, Anti-corruption, and Training and Education were identified in reports generally. At this stage, this study examined *management accountants capturing and identifying environmental and social information along with the knowledge of the Global Reporting Initiatives (GRI) guidelines* (P2).

This study employed GRI guidelines using indicators of environmental and social performance as themes. Based on the results, environmental information in relation to the environmental grievance mechanisms was provided with the highest number of words. Management accountants indicated that environmental management programs in reports helped promote environmental friendly organizations. This included environmental information in relation to product and services, biodiversity, effluences and wastes, use of energy, and material. In addition, social information in reports enabled accountants to represent how sustainable firms improve quality of life of society and the community in which they operate. Social performance including customer health and safety, human rights, occupational health and safety, anti-corruption, and training and education were disclosed relative to the social indicators of the GRI guidelines. This can be interpreted as management accountants of the samples have intentions to report environmental and social performance similarly to the internal measure or guidelines such as GRI. They aim to create data accuracy to not only enhance management decisions but also satisfy information needs of stakeholders. Thus, P3, *management accountants providing environmental and social information to enhance decision-making at boardroom level dealing with stakeholder engagement in environmental and social matters* was examined.

This study aimed to identify whether environmental and social information captured and measured by a sample of management accountants in Thailand enhanced management decisions when dealing with stakeholder engagement in sustainability matters. Environmental and social information in the form of Corporate Social Responsibility Guidelines of SET was employed as analysis themes. Management accountants provided environmental and social information in relation to Consumer responsibility and Respect of human rights and fair treatment of labour. In addition, Environmental conservation and Participation in social development were provided in reports to represent how companies are taking environmental and social issues into account. Based on SET guidelines, environmental and social information was employed to enhance management decisions in relation to improvement in environmental and social performance reporting. Environmental and social information was also aiming to support the demands of stakeholders when looking for ways to invest in environmental friendly and socially aware firms. It can be seen that *management accountants were ideally placed to provide the alignment mechanisms to add sustainable value in economic, environmental and social performance* (P4).

As management accountants are viewed as collaborators in driving sustainable development of firms, environmental and social information in the sustainability reports allows sustainability to be tracked and measured profitability thus improving economic performance. The results from this study reinforce that environmental and social information in reports helps support management decisions in relation to sustainable value in three areas of performance – economic, environmental and social. Management accountants provided social information to support decision-making relating to *quality of life of employees and community improvement* while promoting socially aware organisations in the market. In addition, environmental information enabled enhanced and more effective management decisions in relation to *waste treatments, less resource of usages, lower level of emission and carbon, and environmental improvement*. Environmental performance in reports represented environmentally aware organisations in relation to improvement in environmental sustainability both immediately and in

future. With economic performance, environmental information in reports provided management at boardroom level with a decision-making tools to create *cost saving, energy reduction and waste and emission abatement*. Sustainable companies are enabled to build long-term relationship with stakeholders when disclosing sustainability achievement along with economic improvement.

It can be seen that management accountants as collaborators in driving and promoting environmental friendly and socially aware organisations enable building of business opportunities from compelling operational outcomes and enhancing competitive advantage in markets (Sullivan, 2009). This not only provides corporate management with an understanding of how environmental and social information creates the link between sustainability and eco-efficiency but also plays a decisive role in achieving corporate sustainability in the long-term (S Schaltegger & Burritt, 2010). Sustainability disclosures incorporating accurate data on environmental and social performance provides companies with a way to enhance more effective decisions on economic improvement – cost saving, reduction in use of resources and abatement in wastes and emissions. Environmental and social information in reports can be a business tool for sustainable companies thus having the ability to build value and maintain the connection between societal and economic progress at the same time.

Conclusion of the study

This study aimed to examine management accountants' roles as collaborators in driving the sustainable development of firms in Thailand. Management accounts providing environmental and social information to incorporate sustainability reports were analysed to seek whether data accuracy enhances management decisions and reporting. Environmental and social indicators of the GRI guidelines were employed as an analysis theme to examine how firms promote environmental friendly and socially aware organizations along with economic improvement in markets. The results from the study contributions to literature and practice are discussed further.

Contribution to literature

Management accountants, accounting profession, acting as a collaborator with a sustainable company provide information accuracy on environmental and social performance for enhancement of internal decision and for reporting purposes. Environmental and social performance identified along with the indicators of the international guidelines such as GRI help enhance more effective decision-making and satisfy information needs of stakeholders. The results of the study contribute to the literature in the following ways.

a) Previous studies (Byrne & Pierce, 2007; Cullen & Whelan, 2006; Hill, et al., 2006) claimed that management accountants should be involved in setting sustainability strategies when a company moves towards corporate sustainability. Management accountants play an important role in achieving best sustainability outcomes for sustainable development of firms. Environmental and social information incorporated in reports represents how corporate sustainability is being environmental friendly and socially aware to organisations in markets (ICAEW, 2004b; N. N. Petcharat, 2012; Stefan Schaltegger, 2004). This helps create the connection between societal and economic progress that is linked with business strategies and non-financial reporting (Zvezdov, 2012). The results contribute to the literature that management accountants play a role in capturing environmental and social data to incorporate in sustainability reports (ICAEW, 2004; Institute of Management Accountants, 2008; Petcharat, 2012; Schaltegger, 2004; Zvezdov, 2012). They aimed to fulfil accounting professions' roles in identifying and measuring all sources of expenditures paid for environmental improvement (Collins, et al., 2011) and quality of life of employees, society and the community in which a company operates. In this regard, environmental and social information in reports was employed to support management decisions in relation to sustainability achievement (Collins, et al., 2011). Environmental and social performance

was disclosed to promote how companies taking environmental and social issues into accounts.

b) According to the literature, nowadays, over a thousand firms are using the indicators of the GRI guidelines to help in publishing annual reports on sustainability when promoting sustainability achievement in markets (Institute of Management Accountants, 2008). Previous studies (e.g. Department of Climate Change, 2008b; Gray, 2006; Gray, et al., 2001; KPMG, 2007) also claimed that the implementation of the GRI guidelines could help disclose environmental and social performance thus satisfying information needs of stakeholders. In this study, environmental indicators of the GRI (e.g. Material, energy, effluences and wastes, emissions, biodiversity, environmental grievance mechanisms, and product and service) were set as an analysis theme. Social performance indicators were also set as employment, human rights, occupational health and safety, training and education, anti-corruption, customer health and safety, and local communities. The results contribute to the literature that environmental and social information falls into each theme of the indicators of the GRI guidelines. Management accountants provided environmental and social information in reports were mostly consistent with the indicators of the GRI. They were aiming to create data accuracy on environmental and social responsibility when promoting sustainability achievements for value creation.

c) According to literature (e.g.Collins, et al., 2005; Karlsen, et al., 2008), environmental and social performance in sustainability reports enables firms to satisfy the needs of stakeholders in terms of quality of life and decreasing negative impacts on environmental and society, which can improve economic performance. Environmental and social information incorporated in sustainability disclosures enhance more effective decision-making when dealing with stakeholder engagement (Sullivan, 2009). When stakeholders are interested in sustainability achievement, sustainable firms need to take full

environmental and social awareness into account (Karlsen, et al., 2008). This not only increases the quality of environment and society along with economic sustainability (Collins, et al., 2005) but also supports demands of stakeholders (Yilmaz & Flouris, 2010). Stakeholder engagement in sustainable strategy provides a sustainable company with the right way to drive sustainability achievement (Yilmaz & Flouris, 2010). The results contribute to the literature that environmental and social performance in reports (e.g. consumer responsibility, respect of human rights and fair treatment of labour, environmental conservation, and participation in social development) were identified based on the requirements of the Stock Exchange of Thailand (Lin, 2009; SET, 2008). Environmental and social performance in reports aimed to enhance management decisions at boardroom level when dealing with concerns of stakeholders. At this stage, environmental and social performance in reports enables firms to satisfy information needs of stakeholders when sustainable strategic plans ensure ongoing sustainable success by protecting existing value from being prematurely destroyed (Sobel & Reding, 2012).

d) The roles of management accountants in sustainability strategy in this study provide a company with a way to enhance environmental and social sustainability (Collins, et al., 2011) along with eco-efficiency at the same time (S Schaltegger & Burritt, 2010). Management accountants understand the challenge in the adoption of sustainability reporting practices (Zvezdov, 2012) not only to create data accuracy incorporated in reports but also as a collaborator to drive toward achieving sustainability success both immediately and in future (Schaltegger & Burritt, 2010). Environmental and social information integrated in the voluntary disclosures create better business opportunities in markets (Pipat Yodprutikarn, 2010). This helps sustainable companies to promote environmental friendly and socially aware organisations when maximizing profits in markets (Nijkamp & Vreeker, 2000; Suraphan Thawornwong, 2011). The results

contribute to the literature that environmental information enhances decision-making relating to waste treatments, less resource usage, lower levels of emissions and carbon, and environmental improvement. Social information in reports supported management decisions in relation to quality of life of employees and the community. And economic performance represented how a company improves cost saving, energy reduction, waste and emission abatement in sustainability reports. Based on the results, environmental, social and economic performance in sustainability disclosures aims to promote sustainability achievement thus improving positive impacts on environmental and social issues while maximizing profits (economic) in markets. Environmental and social information was linked with eco-efficiency as business strategies thus building sustainable development of firms.

Contribution to practices

As management accountants served as collaborators with a company in providing data accuracy on environmental and social performance, sustainability disclosures were promoting environmentally and socially aware organisations in markets. Accurate data on environmental and social performance in reports enables more effective decisions at boardroom level when dealing with concerns of stakeholders. This helps firms to have more ability to create better business opportunities in markets. The results of the study contribute to practices as follows:

a) Management accountants need to play a role in providing environmental and social information to incorporate in sustainability reports thus driving sustainable success. As they are expected to combine financial expertise and business acumen, environmental and social information in reports can be used as a business tool to promote environmental friendly and socially aware organisations. Management accountants collaborating with a company identify environmental information from environmental grievance mechanisms,

energy, and effluences and wastes, material, product and services, and biodiversity to represent how a company take environmental issues into account. Social information can be measured from local community development, employment indicators, customer health and safety, human rights, occupational health and safety, anti-corruption, and training and education when promoting how companies improve quality of life of society and the community in which they operate.

b) International guidelines/measures can be employed as themes/patterns in identifying and capturing environmental and social information such as Global Reporting Initiative (GRI). The guidelines can help management accountants to understand and recognise all sources of expenditures paid for short-term and long-term development of environmental and social performance. By implementing the indicators of the GRI guideline as an analysis theme, environmental and social performance disclosed along with the indicators provide sustainable companies with a way to improve decision-making and reporting. Environmental performance in sustainability reports can be disclosed along with the indicators of the material, energy, biodiversity, emissions, effluences and wastes, product and services, and environmental grievance mechanisms. Social performance indicators (e.g. employment, occupational health and safety, training and education, human rights, local communities, anti-corruption, and customer health and safety). Environmental and social performance disclosed along with international guidelines not only creates data accuracy but also helps improve effective decision-making at boardroom level and for external users.

c) In Thailand, the Stock Exchange of Thailand has required Thai-listed companies to disclose environmental and social responsibility using indicators of the Consumer responsibility, Respect of human rights and fair treatment of labour, Environmental conservation, and Participation in social development (SET, 2008). This not only enhances more effective management decision but also enables firms to deal with

stakeholders' concerns (Sullivan, 2009). When stakeholders are looking for ways to invest in environmental friendly and socially aware firms, management accountants acting as a collaborator with a company helps promote environmental and social sustainability achievement. Management accountants collaborating with a company in providing environmental and social information need to have a better understanding of the practices of environmental sustainability reporting. Environmental and social information enables them to enhance decision-making at boardroom level when coping with concerns of stakeholders. As stakeholder engagement has an influence on sustainability success, environmental and social performance in sustainability reports needs to satisfy information needs of stakeholders.

d) Management accountants are involved in adding sustainable value in economic, environmental and social performance thus collaborating with a company to promote its sustainability achievement. Listed companies disclose environmental performance thus promoting how companies improve waste treatments, less usages of resources, and lower level of emission and carbon, and environmental management. Social performance in terms of *improvement in quality of life of employees and community* are disclosed to represent how companies take social issues into account. Economic performance in reports shows that environmental information enables more effective decision-making relating to cost saving, energy reduction, waste and emission abatement. This leads to sustainable success of firms by way of making right decisions (Lamberton, 2005). By incorporating three areas of performance – economic, environmental and social, sustainable companies build better opportunities from compelling operational outcomes and enhancing competitive advantage in markets (Sullivan, 2009). Management accountants as collaborators support successful corporate sustainability and disclose environmental and social performance that link between sustainability and eco-efficiency for value creation of shareholders.

Limitations of the study

This study is limited to the management accountants' roles as collaborators providing environmental and social information to incorporate in sustainability reports along with economic improvement. The indicators of the GRI guidelines were employed as an analysis theme to investigate environmental and social performance in reports. Environmental and social performance identified based on concerns of stakeholders engagement was targeted for investigation. Management accountants' roles collaborating with a company to disclose three areas of performance – economic, environmental and social enable them to support successful corporate sustainability both immediately and in the future. Limitations of the study are as follows:

a) This study employed purposive sampling methods to select fifty management accountants to investigate their roles in driving sustainable achievement of Thai-listed companies. The selection of an appropriate sampling group to be studied (Cavana, et al., 2001) can be best alternative available given the purpose of the study (Neuman, 2006). Management accountants acting as a collaborator with a company in identifying and capturing environmental and social information to incorporate in sustainability reports were targeted for investigation. Their roles in sustainability strategies within a firm were questioned to seek what knowledge and understanding they have in driving sustainable success. This includes the ability of providing accurate data on environmental and social performance for enhancement of management decisions and for reporting purposes.

b) Qualitative research method was employed in this study to analyse interview contents by counting words falling in the themes of environmental and social performance indicators. As the research design of this study was qualitative research analysis, propositions were posed based on the examination of case studies. The design helps this study to use theoretical proposition strategies in data analysis to create a deeper

understanding of existing business activities (Yin, 1993, 2009). In-depth interview method was employed to investigate management accountants and their roles as a collaborator in driving for sustainable development of firms.

c) Environmental and social indicators of the GRI guidelines were employed as an analysis theme to seek where data accuracy on environmental and social performance incorporated in reports. A set of environmental indicators including biodiversity, effluences and wastes, emissions, energy, environmental grievance mechanisms, material, and product and services were defined as an analysis theme. In addition, a theme of social indicator that refers to anti-corruption, customer health and safety, employment, occupational health and safety, human rights, local communities, training and education. As over a thousand firms using the GRI's framework as a basis for publishing annual reports (Institute of Management Accountants, 2008), the fifty Thai-listed companies, the sample of the study, were examined for sustainability achievement when disclosing environmental and social performance along with economic improvement in the reports.

Recommendation for future research

It is recommended that future research extends beyond the sampling group selection methods to further select appropriate samples to be surveyed. Quantitative research methods need to be considered for further study including an analysis theme based on the requirements of the Stock Exchange of Thailand. The research suggests future exploration in the following areas:

a) It is suggested that future research should employ random sampling methods to select a sampling group randomly from different business sectors to be surveyed. The random sampling methods would provide future research with a way to select straightforward probability sampling group. This method is most popular for choosing a sample among population for a wide range of purposes. The simple random sampling method helps

removes bias from the selection procedures so that it results in obtaining representative samples logically (Gravetter & Forzano, 2011). Future research should also survey few hundreds of management accountants of Thai-listed companies from other sectors to seek their roles in driving as a collaborator to promote sustainability achievement. The sample size of more than a few hundred can be suitably applied with a sample random sampling in an appropriate manner (Saunders, Lewis, & Thornhill, 2012).

b) Quantitative research method should be considered for future research to survey a few hundred of management accountants from food and beverage manufacturing, petroleum and chemical product manufacturing, machinery and equipment manufacturing, construction, and/or transports (air and road). Statistical analysis methods should be employed for hypotheses testing. By applying quantitative data analysis in future research, the results can turn raw numbers into meaningful data through the application of rational and critical interpretation. The results can be interpreted in many different ways depending on research focuses and objectives thus applying fair and careful judgement.

c) Environmental and social indicators based on the requirements of the Stock Exchange of Thailand (SET) should be set as analysis themes (e.g. consumer responsibility, respect of human rights and fair treatment of labour, environmental conservation, and participation in social development). The sample from the same sectors in this study should be also targeted for survey in future research to enrich interpretations of quantitative data.

Concluding remarks

Management accountants play an important role in driving as a collaborator with a company to promote sustainability achievement in which it operates. This study expected that management accountants, an accounting profession, would act as collaborators with companies to

drive sustainable successes when disclosing three areas of performance – economic, environmental, and social. Environmental and social performances identified in the sustainability reports were expected to fall into the indicators of the GRI guidelines while enhancing more effective decision-making and reporting purposes. Environmental and social information in reports was aimed to support concerns of stakeholders relating to environmental and social matters where a company operates thus adding value to sustainable development of firms.

According to the results, management accountants as collaborators with a company were driving sustainable success. Environmental and social information in reports was disclosed to represent how a company takes environmental and social issues into account. Environmental and social information was collected from all sources of expenditures paid for improvement in quality of environment, society, and community. Environmental performance of sample firms fell into each theme of the GRI's indicators including environmental grievance mechanisms, energy, and effluences and wastes, use of material, product and services, and biodiversity. Social performance were relevant to the indicators of the GRI – local community development, employment indicators, customer health and safety, human rights, occupational health and safety, anti-corruption, and training and education. Environmental and social information in the sustainability reports of a sample were basically consistent with the indicators of the GRI guidelines when used to promote sustainability targets.

In dealing with stakeholder engagement, management accountants were involved in incorporating environmental and social information in the reports to support management decisions and satisfy information needs to stakeholders. Environmental and social performance was disclosed based on the requirements of the Corporate Social Responsibility Guidelines by the Stock Exchange of Thailand (SET). Management accountants indicated that environmental and social information disclosed based on the Consumer responsibility, Respect of human rights and fair treatment of labour, Environmental conservation, and Participation in social development was

able to support concerns of stakeholders. Environmental and social performance in sustainability reports was aiming to enhance more effective decision-making when dealing with stakeholder engagement. Successful corporate sustainability reported how a company improve waste treatments, less resources of usages, and lower level of emission, and carbon, as well as environmental management. Sustainable company also disclosed social well-being in terms of development of quality of life of employees and community in which it operates. In addition, economic improvement was reported on how a company improves cost saving from energy reduction, waste management, and emission abatement while achieving sustainability targets.

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APPENDIX

Interview instrument

Interview questions:

Part A: Background of a company

Industry group/sector:……

Type of current accounting system:……

Type(s) of sustainability disclosure(s):……..……..……..……..

Period of sustainability accounting training: ……..……

What is your role in environmental and social responsibility:……...……

Part B: General knowledge about sustainability accounting

1. Tell about your roles in a corporate social responsibility (CSR) policy in your company
2. Explain your current accounting system that help identify and measure environmental and social information for decision making and reporting purposes
3. Please define the concept of sustainability accounting in your organization
4. Identify environmental and social information captured from your business processes
5. Identify any other expenditures paid for environmental and social management performance
6. Explain what indicators of GRI guidelines employed for identification and measurement of environmental and social performance

Part B: 2) Management accountant's roles in reporting environmental and social information

7. Please explain how you are involved in a sustainability strategies, policy, and/or procedures within your firm
8. Identify how the sustainability strategies lead you to incorporate with current accounting system for environmental and social information al
9. Please tell about how you are related to the management decisions at boardroom level for environmental and social responsibility disclosures
10. Please explain how environmental and social information in the reports help decision makers for investments in your company
11. Please tell about how company meet sustainability achievements from disclosing environmental, social, and economic performance to stakeholders and public
12. Has your company recognized as a sustainable development of firm when providing sustainability reports in the stock exchange market (SET)? If yes please explain

BIOGRAPHY

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