ตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กร: ผลกระทบของการรับรู้ความไม่แน่นอนของตลาดและกฎหมายสิ่งแวดล้อมที่มีต่อผลการดำเนินงานด้านการตลาด สังคม และสิ่งแวดล้อมขององค์กร

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THE MODEL OF CORPORATE ENVIRONMENTALISM: THE EFFECTS OF PERCEIVED MARKET AND REGULATION UNCERTAINTIES UPON MARKETING, SOCIAL, AND ENVIRONMENTAL PERFORMANCE

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อภิชาติ คณารัตนวงศ์ : ตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กร: ผลกระทบของการรับรู้ความไม่แน่นอนของตลาดและกฎหมายสิ่งแวดล้อมที่มีต่อผลการดำเนินงานด้านการตลาด สังคม และสิ่งแวดล้อมขององค์กร (THE MODEL OF CORPORATE ENVIRONMENTALISM: THE EFFECTS OF PERCEIVED MARKET AND REGULATION UNCERTAINTIES UPON MARKETING, SOCIAL, AND ENVIRONMENTAL PERFORMANCE) อ. ที่ปรึกษาวิทยานิพนธ์หลัก : รศ. ดร. กุณฑลี รื่นรมย์, 195 หน้า.

การตัดสินใจเชิงกลยุทธ์ของบริษัทถูกกำหนดโดยปัจจัยภายในและปัจจัยแวดล้อมภายนอกบริษัท งานวิจัยเรื่องนี้นำแนวความคิดดังกล่าวมาพัฒนาและศึกษา "ตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กร" การตระหนักถึงสิ่งแวดล้อมขององค์กรเป็นการตัดสินใจเชิงกลยุทธ์ที่มุ่งหวังให้องค์กรมีความได้เปรียบทางธุรกิจ ปัจจัยแวดล้อมภายนอกที่นำมาศึกษาในงานวิจัยเรื่องนี้ ได้แก่ การรับรู้ความไม่แน่นอนของตลาดและกฎหมายสิ่งแวดล้อมขององค์กร ส่วนปัจจัยภายใน ได้แก่ ความสัมพันธ์ระหว่างผู้บริหารระดับสูงของบริษัทกับผู้เชี่ยวชาญด้านสิ่งแวดล้อมภายนอกองค์กร วิสัยทัศน์ร่วมของผู้บริหารและพนักงาน และความสามารถทางเทคโนโลยีเพื่อสิ่งแวดล้อม นอกจากนี้งานวิจัยศึกษาผลการดำเนินงานด้านการตลาด สังคม และสิ่งแวดล้อมของบริษัทที่เป็นผลจากการตระหนักถึงสิ่งแวดล้อมขององค์กร

งานวิจัยเรื่องนี้พัฒนาตัวแบบที่ศึกษาอิทธิพลทางตรง ตัวปรับ และอิทธิพลทั้งทางตรงและตัวปรับพร้อม ๆ กันของปัจจัยภายนอกทั้งสองปัจจัย กล่าวคือ ตัวแบบอิทธิพลทางตรงศึกษาอิทธิพลทางตรงของการรับรู้ความไม่แน่นอนของตลาดและกฎหมายสิ่งแวดล้อมขององค์กร ตัวแบบอิทธิพลตัวปรับศึกษาอิทธิพลของการรับรู้ความไม่แน่นอนของตลาดและกฎหมายสิ่งแวดล้อม ที่มีต่อความสัมพันธ์ระหว่างปัจจัยภายในและการตระหนักถึงสิ่งแวดล้อมขององค์กร ตัวแบบที่สามศึกษาทั้งอิทธิพลทางตรงและอิทธิพลตัวปรับพร้อม ๆ กัน

ข้อมูลที่ใช้ในการทดสอบตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กรทั้ง 3 ตัวแบบ เก็บจากบริษัทผู้ผลิตในอุตสาหกรรมหลักของประเทศ 4 อุตสาหกรรม คือ อุตสาหกรรมอาหาร อุตสาหกรรมยานยนต์และชิ้นส่วน อุตสาหกรรมไฟฟ้าและอิเลคทรอนิคส์ และอุตสาหกรรมสิ่งทอ โดยใช้วิธีการเก็บข้อมูลทางไปรษณีย์ กลุ่มตัวอย่างประกอบด้วย 772 บริษัท และใช้การวิเคราะห์กลุ่มพหุด้วยโมเดลโครงสร้างเชิงสาเหตุ (Structural Equation Modeling) ในการวิเคราะห์ข้อมูล โปรแกรมทางสถิติที่ใช้คือ SPSS 17.0 และ LISREL 8.53

ผลการวิจัย พบว่า การรับรู้ความไม่แน่นอนของตลาดที่เป็นมิตรกับสิ่งแวดล้อมมีอิทธิพลเชิงลบอย่างมีนัยสำคัญทางสถิติต่อการตระหนักถึงสิ่งแวดล้อมขององค์กร ในขณะที่ การรับรู้ความไม่แน่นอนของกฎหมายสิ่งแวดล้อมเป็นตัวปรับความสัมพันธ์ระหว่างตัวแปรความสัมพันธ์ของผู้บริหารระดับสูงกับผู้เชี่ยวชาญด้านสิ่งแวดล้อมภายนอกกับการตระหนักถึงสิ่งแวดล้อม อย่างไรก็ตาม ค่าอิทธิพลของการรับรู้ความไม่แน่นอนของตลาดที่มีต่อการตระหนักถึงสิ่งแวดล้อมขององค์กรมีขนาดเล็กมาก ซึ่งอาจจะไม่มีผลในทางปฏิบัติ (Practical Significance) วิสัยทัศน์ร่วมและความสามารถทางเทคโนโลยีเพื่อสิ่งแวดล้อมมีอิทธิพลเชิงบวกต่อการตระหนักถึงสิ่งแวดล้อมขององค์กร ส่วนความสัมพันธ์ระหว่างผู้บริหารระดับสูงกับผู้เชี่ยวชาญด้านสิ่งแวดล้อมภายนอกไม่พบว่ามีอิทธิพลทางตรงต่อการตระหนักถึงสิ่งแวดล้อมขององค์กร ผลวิจัยบ่งชี้อีกว่าการตระหนักถึงสิ่งแวดล้อมขององค์กรมีอิทธิพลเชิงบวกต่อผลการดำเนินงานทั้งในด้านการตลาด สังคม และสิ่งแวดล้อมขององค์กร

สาขาวิชา : บริหารธุรกิจ ลายมือชื่อนิสิต .....

ปีการศึกษา : 2552 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก .....

5193155826 : MAJOR BUSINESS ADMINISTRATION
KEYWORDS : COPORATE ENVIRONMENTALISM / MODERATED MEDIATION MODEL / PERCEIVED MARKET UNCERTAINTY / PERCEIVED REGULATION UNCERTAINTY / MARKETING PERFORMANCE / SOCIAL PERFORMANCE / ENVIRONMENTAL PERFORMANCE

APICHART KANARATTANAVONG : THE MODEL OF CORPORATE ENVIRONMENTALISM: THE EFFECTS OF PERCEIVED MARKET AND REGULATION UNCERTAINTIES UPON MARKETING, SOCIAL, AND ENVIRONMENTAL PERFORMANCE. THESIS ADVISOR : ASSOC. PROF. GUNTALEE RUENROM, Ph.D., 195 pp.

Based on the marketing strategy formulation perspective, the current research incorporates external factors of firms, the perceived uncertainty of environmental market and environmental regulation, together with the internal resources and capabilities of firms, relationship with external organizations, shared vision, and technological capability into three proposed models. The proposed models investigate the influence of external and internal antecedents on corporate environmentalism, which is thought of as a strategy. The proposed models also examine three performance outcomes of corporate environmentalism, namely marketing, social, and environmental performance.

The three proposed models consist of the direct effect, the moderating effect, and the simultaneous effect models. Each model differs in the different effects of the perceived uncertainty of environmental market and regulation. The direct effect model studies the direct effect of the two perceived uncertainties on corporate environmentalism. The moderating effect model, which resembles a moderated mediation model, investigates the effect of perceived uncertainty on three associations between internal resources and capabilities and corporate environmentalism. Finally, the simultaneous effect model investigates the direct effect and the moderating effect of the perceived uncertainty simultaneously.

To test the models, a data set of 772 observations was collected, through a mail survey, from manufacturing firms in food, automotive and parts, electrical and electronics, and garment and textile industries. Multiple group analysis by structural equation modeling (SEM) was utilized to analyze the data, particularly the moderating effect of the perceived uncertainty. The analysis was done using SPSS 17.0 and LISREL 8.53 statistical programs.

The results reveal that perceived market uncertainty statistically negatively influences corporate environmentalism while perceived regulation uncertainty moderates the association between relationship with external organizations and corporate environmentalism. Although, perceived market uncertainty negatively affects corporate environmentalism, the coefficient of the effect is so small that it may not have a practical significance. Shared vision and technological capability are found to positively affect corporate environmentalism whereas relationship with external organizations does not have an influence on corporate environmentalism. Corporate environmentalism improves the marketing, social, and environmental performance of firms.

Field of Study : Business Administration Student's Signature .....

Academic Year : 2009 ..... Advisor's Signature .....

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Chapter I

Introduction

1.1. Rationale

Corporate environmentalism refers to the extent to which firms incorporate natural environmental concerns into their strategic decision making. Scholars have attempted to identify the antecedents of corporate environmentalism by adopting various theories and perspectives such as the political economy perspective (e.g., Banerjee, Iyer, and Kashyap, 2003; Menon and Menon, 1997; Langerak, Peelen, and van der Veen, 1998), stakeholder theory (e.g., Henriques and Sadorsky, 1996; Henriques and Sadorsky, 1999), and the resource-based view (e.g., Aragón-Correa, Hurtado-Torres, Sharma, and García-Morales, 2008; Sharma, Aragón-Correa, and Rueda-Manazanares, 2007; Sharma and Vredenburg, 1998; Manguc and Ozanne, 2005; Baker and Sinkula, 2005). The current research adopts the marketing strategy formulation perspective in order to build a model of corporate environmentalism. The model examines both antecedents and consequences of corporate environmentalism.

The above-mentioned theories certainly assist researchers in identifying factors influencing corporate environmentalism; however, some limitations exist. In stakeholder theory, stakeholders are those who affect and/or are affected by firms (Banerjee, 2001; Freeman, 1984). Banerjee (2001) noted Sternberg's (1997) criticism of the definition as being too general. In addition, all identified stakeholders (i.e., consumers, employees, suppliers, shareholders, the neighboring community, and lobbyists) may not be necessarily related to firms (Sternberg, 1997; Banerjee, 2001). The political economy perspective emphasizes economic and political forces in society that have an influence on firms' behavior (Stern and Reve, 1980). The forces include the internal and external economy (i.e., organizational structure, competitive advantage, competitive intensity, and the attractiveness of green market opportunities) and the internal and external polity (i.e., employees, top management, consumers,

competitors, regulation, and the general public). Based on the political economy perspective, Banerjee et al. (2003) identified competitive advantage as an internal economy force that had a positive influence on corporate environmentalism. Meanwhile, Hart (1995), Aragón-Correa and Sharma (2003), and Sharma and Vredenburg (1998) contended that corporate environmentalism enhanced competitive advantage. The apparent contradiction exemplifies that the political economy perspective does not help avoid the tautology problem. Hart (1995) proposed the "natural resource-based view" of firms to explain corporate environmentalism but Oliver (1997) remarked that the resource-based view focused exclusively on internal resources and capabilities of firms, disregarding external factors. Consequently, Aragón-Correa and Sharma (2003) proposed the "contingency resource-based view" to account for the effect of external factors on corporate environmentalism. Sharma et al. (2007) empirically studied the moderating effect of general business environment uncertainty on the relationship between the internal capabilities of firms (i.e., stakeholder engagement, strategic proactivity, and continuous innovation) and proactive environmental strategy in a service industry.

The current research attempts to extend the literature on corporate environmentalism by adopting the marketing strategy formulation perspective as its theoretical base. Varadarajan (1992), Menon and Menon (1997), Banerjee (2002), and Banerjee et al. (2003) maintained that corporate environmentalism was a strategy. Varadarajan and Jayachandran (1999) argued that firms' strategies were to attain competitive advantage and they were shaped by the internal and external factors of firms. Identifying the antecedents of corporate environmentalism based on the marketing strategy formulation perspective results in several advantages. First, firms' internal factors and external factors which influence corporate environmentalism are simultaneously incorporated into the model. Second, perceived environmental uncertainty, as an external factor, can be specifically investigated according to its sources and effects. Perceived uncertainty from different sources holds a differential effect (Atuahene-Gima and Murray, 2004). For instance, Atuahene-Gima and Murray (2004) found that technology uncertainty positively moderated the impact of marketing strategy comprehensiveness (MSC) on performance, whereas market

uncertainty negatively moderated the relationship. Furthermore, previous literature suggested that perceived environmental uncertainty had a direct effect and/or a moderating effect. Clark, Varadarajan, and Pride (1994) and Milliken (1987) argued that firms in a high uncertainty circumstance were skeptical of how the uncertain situation would affect them, what effect it would have, and what a strategic action brought them. Thus, firms postponed strategic decisions or exploited shielding actions (Milliken, 1987). Concisely, perceived uncertainty directly and adversely affects the strategic decision (i.e., corporate environmentalism). Aragón-Correa and Sharma's (2003) contingency resource-based view asserted that perceived uncertainty moderated the association between internal resources and capabilities of firms and corporate environmentalism. Based on the literature, the current research investigates the direct effect, the moderating effect, and the two effects concurrently on corporate environmentalism. As for the source of the perceived uncertainty, the research examines perceived uncertainty of environmental market and environmental regulation. The perceived environmental market uncertainty and perceived environmental regulation uncertainty act as the external factors influencing corporate environmentalism.

The second focal interest of the model of corporate environmentalism proposed in this research is the consequences of corporate environmentalism. The literature has investigated the performance of corporate environmentalism: whether or not it enhanced sales growth, profit growth, market share, and/or return on investment (i.e., Aragón-Correa et al., 2008; Menguc and Ozanne, 2005; Baker and Sinkula, 2005). In addition, corporate environmentalism was argued to have an impact on corporate image, brand image, customer loyalty, competitive advantage, and/or organizational capability (i.e., Aragón-Correa and Sharma, 2003; Sharma and Vredenburg, 1998; Menon and Menon, 1997; Menon, Menon, Chowdhury, and Jankovich, 1999). Nonetheless, results of empirical studies suggested an inconclusive performance of corporate environmentalism (Aragón-Correa et al., 2008).

Firms and society are interdependent. "Successful corporations need a healthy society…. At the same time, a healthy society needs successful companies", stated

Porter and Kramer (2006: page 83). Firms concerned only with their own economic wealth without taking account of social and environmental concerns in their strategic decision making would be unsustainable in the long run (Bansal, 2005).

Economic, social, and environmental performance outcomes of firms are the pre-requisite conditions for moving forward to "corporate sustainable development" (Porter and Kramer, 2006; Bansal, 2005; Dyllick and Hockerts, 2002; Lo and Sheu, 2007; Labuschagne, Brent, and van Erck, 2005). The three bottom lines are necessary conditions of corporate sustainability, but they are not sufficient ones (Bansal, 2005). Firms are at risk economically if they do not improve their economic, social, and environmental performance (Bansal, 2005). A wide range of economic performance has been studied. In this research, economic performance focuses on (1) market share, (2) profit, and (3) sales, because they are economic objectives firms want to achieve. Consequently, economic performance, in this research, is called marketing performance. Unlike economic performance, social performance has been rarely examined. Some case studies suggested that without purposefully aiming at social outcomes, corporate environmentalism conceivably enhanced the social performance of firms (Lamming, Faruk, and Cousins, 1999). Social performance outcomes include, for example, (1) a better working environment (Dunphy, 2003), (2) the extension of the environmental manager's role covering social issues (Schaefer, 2004). In short, the second interest of this research examines the marketing, social, and environmental performance of corporate environmentalism.

In summary, the current research investigates the antecedents, internal and external factors, and the consequences of corporate environmentalism.

1.2. Research Questions

The model of corporate environmentalism is proposed in response to the following four research questions listed below:

1. Which, among the proposed models; namely the direct effect, the moderating effect, and the simultaneous (direct and moderating) effect models, best fits and explains corporate environmentalism and its marketing, environmental, and social performance?

2. Do the selected internal factors of firms best explain corporate environmentalism?

3. What are the effects of perceived uncertainty of environmental market and environmental regulation on corporate environmentalism? Does the perceived uncertainty have:
    a. a direct effect, or
    b. a moderating effect, or
    c. a simultaneous effect.

4. Does corporate environmentalism improve the marketing, social, environmental performance of firms?

1.3. Research Objectives

There are four objectives of this research:

1. To develop and validate the direct effect, moderating effect, and simultaneous effect models of corporate environmentalism.

2. To identify the key variables internal to firms that can best explain corporate environmentalism.

3. To investigate the effect of external factors, particularly the perceived uncertainty of environmental market and environmental regulation on corporate environmentalism.

4. To investigate the marketing, social, and environmental performance of corporate environmentalism.

1.4. Research Plan and Scope of the Study

The current research uses multiple group analysis by structural equation modeling (SEM) to examine three proposed models: the direct effect, the moderating effect, and the simultaneous effect models. The unit of analysis of the research is manufacturing firms in four industries in Thailand: food, automotive and parts, electrical and electronics, and garment and textile industries. Salzmann, Lonescu-Somers, and Steger (2005) found that most empirical research on sustainable development has been conducted in the US and in European countries. In addition, Huong (1999) and Watchaneeporn Setthasakko (2007) documented that that environmental laws and regulations in Southeast Asian countries were incoherent; enforcement and natural environmental movement were weak; and co-operation among involved parties was inadequate. This certainly offers a distinct context for research on corporate environmentalism, different from context for research conducted in developed countries.

This research used a mail survey to collect data. The data collection process followed the following steps:

1. Roughly 12,000 company names were gathered from official websites, published directories, and/or electronic databases of trade associations, institutes, and private/government bodies involved in the targeted industries.

2. The 12,000 companies were contacted by telephone in order to verify their mailing addresses and the top management's names. This process resulted in 4,590 valid company names and addresses.

3. 4,590 questionnaire packages, including a souvenir and an introduction letter from the Thai Chamber of Commerce and the Board of Trade of Thailand, were mailed out to the sample in October, 2009.

4. 1,232 questionnaires were returned during 13 October 2009 - 24 November 2009. The response rate is 26.8%.

SPSS 17.0 and LISREL 8.53 statistical packages were employed to analyze data.

1.5. Expected Contributions

The research extends the existing literature on corporate environmentalism and strategy. Theoretically, it examines the importance of the specific source and differing effects of perceived environmental uncertainty in the context of corporate environmentalism: whether the perceived environmental market and regulation uncertainty have a main effect, moderating effect, or simultaneous effect on corporate environmentalism. As scant research has investigated the social performance of corporate environmentalism, so the current research tests whether corporate environmentalism will improve the social performance of firms. A comprehensive understanding of the effect of regulation uncertainty on corporate environmentalism and the influence of corporate environmentalism on social performance is certainly valuable to policy makers in assisting their strategy to stimulate and regulate firms to be more environmentally concerned.

Business managers can also benefit from the research. The results of the research can be a guideline for resource and capability allocation by firms, particularly in developing countries, when they attempt to successfully implement corporate environmentalism. The research was conducted in Thailand; it aims to test whether the internal resources and capabilities of firms suggested by researchers in developed countries as influencing corporate environmentalism perform in the same fashion.

1.6. Conclusion

This research examines corporate environmentalism, using the marketing strategy formulation perspective to identify external and internal factors influencing corporate environmentalism. It also investigates three consequences of corporate environmentalism. Three models are proposed. Each model investigates different kinds of effect of the external factors. The models include the direct effect, the moderating effect, and the simultaneous effect (both direct effect and moderating effect) models. Cross section data from manufacturing firms in four industries was collected to test the models. The current study is expected to have both theoretical and managerial implications.

Chapter II

Literature Review

This chapter is divided into two main portions. The first portion deals with previous literature on corporate environmentalism, its definition, antecedents, and consequences. As this research considers corporate environmentalism as a strategy, being shaped by internal and external factors of firms, the second portion reviews the literature on several aspects of the environment: definition, perception (versus objectivity), type, and source.

2.1. Corporate Environmentalism

Studies are varied in defining corporate environmentalism, depending on the scope of business activities and decisions into which natural environmental concerns are incorporated. Different terms, consequently, are used to refer to corporate environmentalism (see Table 2.1). Throughout this research, the term “corporate environmentalism” is used to refer to the extent to which firms incorporate concerns for the natural environment into their strategic decisions and practices, unless otherwise specified.

In line with Prakash (2002), Chamorro and Bañegil (2006) classified corporate environmentalism into three levels and defined corporate environmentalism at each level as follows.

At the “product” level, it refers to natural environmental concerns being incorporated into a product’s features and attributes, as well as into usage in the consumption and post-consumption stages (Chamorro and Bañegil, 2006). Langerak et al. (1998), for instance, defined “Green Marketing” as decisions pertaining to developing and marketing green products.

Table 2.1: Definitions of Corporate Environmentalism and its Other Related Terms

Study	Term	Definition (from original)	Focused Level
Klassen and McLaughlin (1996)	Environmental Management	Environmental Management refers to "all efforts to minimize the negative environmental impact of the firm's products throughout their life cycle" (Klassen and McLaughlin, 1996: page 1199).	Product level
Langerak, Peelen, and van der Veen (1998)	Green Marketing	"The decision to adopt green marketing is made manifest through the development and commercialization of green products" (Langerak et al., 1998: page 325).	Product level
Varadarajan (1992) and Menon and Menon (1997)	Enviropreneurial Marketing (EM)	Varadarajan (1992) firstly defined EM as "[e]nvironmentally-friendly marketing policies, strategies, and tactics initiated by a firm in the realm of marketing" (Varadarajan, 1992: page 342). Menon and Menon (1997) then defined EM as "the process for formulating and implementing entrepreneurial and environmentally beneficial marketing activities with the goal of creating revenue by providing exchanges that satisfy a firm's economic and social performance objectives" (Menon and Menon, 1997: page 54).	Process level
Florida, Atlas, and Cline (2001)	Environmentally Conscious Manufacturing	"Environmental innovations are a special class of advanced manufacturing practices, referred to here as environmentally conscious manufacturing (ECM), that include source reduction, recycling, pollution prevention, and green product design" (Florida, Atlas, and Cline, 2001: page 209).	Process level
Henriques and Sadorksy (1996)	Environmentally Responsive Firm	An environmentally responsive firm refers to "a firm that has formulated an official plan for dealing with environmental issues" (Henriques and Sadorksy, 1996: page 382).	Process level
Khanna and Anton (2002)	Environmental Management System (EMS)	Environmental Management System (EMS) is "a collection of internal efforts at formally articulating environmental goals, making choices that integrate the environment into production decisions, identifying opportunities for pollution (waste) reduction and implementing plans to make continuous improvements in production methods and environmental performance" (Khanna and Anton, 2002: page 541).	Process level
Sharma (2000)	Environmental Strategy (ES)	Environmental Strategy refers to "the outcomes in the form of actions firms take for regulatory compliance and to those they take voluntarily to further reduce the environmental impacts of operations" (Sharma, 2000: page 682).	Process level
Aragón-Correa and Sharma (2003)	Reactive and Proactive Environmental Strategy	"Reactive environmental strategy is a response to changes in environmental regulations and stakeholder pressures via defensive lobbying and investments in end-of-pipe pollution control measures…. [P]roactive postures involve anticipating future regulations and social trends and designing or altering operations, processes, and products to prevent (rather than merely ameliorate) negative environmental impacts" (Aragón-Correa and Sharma, 2003: page 73)	Process level

Table 2.1: Definitions of Corporate Environmentalism and its Other Related Terms (Continued)

Study	Term	Definition (in original)	Focused Level
		.	
Banerjee (2002) and Banerjee, Iyer, and Kashyap (2003)	Corporate Environmentalism	"Corporate environmentalism is the organization-wide recognition of the legitimacy and importance of biophysical environment in the formulation of organization strategy, and the integration of environmental issues into a firms' decision-making process" (Banerjee, 2002: page 181).	System level
Baker and Sinkula (2005)	Enviropreneurial Marketing (EM)	The authors extend the EM concept of Menon and Menon (1997) and Varadarajan (1992) to encompass "an organization-wide philosophy that places the physical environment among the top concerns and potential differentiating factors of the firm" (Baker and Sinkula, 2005: page 463). They view the environment as a commitment, a righteousness, and an opportunity (Baker and Sinkula, 2005).	System level
Menon, Menon, Chowdhury, and Jankovich (1999)	Environmentally-Based Marketing Programs (EBMPs)	EBMPs refer to "corporate policies, practices, and procedures in the realm of marketing that explicitly incorporate an ecologically-friendly focus with the goal of creating revenue providing exchanges that satisfy organizational and individual objectives for a product and/or product line" (Menon et al., 1999: page 3).	System level
Bansal and Roth (2000)	Corporate Ecological Responsiveness	Corporate Ecological Responsiveness is defined as "a set of corporate initiatives aimed at mitigating a firm's impact on the natural environment. These initiatives can include changes to the firm's products, processes, and policies, such as reducing energy consumption and waste generation, using ecologically sustainable resources, and implementing an environmental management system" (Bansal and Roth, 2000: page 717).	System level
Chamorro and Bañegil (2006)	Green Marketing Philosophy	It refers to "the way to conceive exchange relationship that goes beyond the current needs of the consumers, considering at the same time the social interest in protecting the natural environment" (Chamorro and Bañegil, 2006: page 12).	System level
Stone and Wakefield (2000)	Eco-Orientation	Eco-Orientation refers to "the organization-wide effort to generate ecological intelligence pertaining to current and future societal environmental needs, disseminate this intelligence throughout organizational departments, and generate acceptance and responsiveness to these needs through the adaption of internally developed programs which create and foster organizational and public perception of ecological concern" (Stone and Wakefield, 2000: page 22).	System level

At the “process” level, firms regards natural environmental concerns as one of the considerations in the firms’ operations (Chamorro and Bañegil, 2006), for example manufacturing practices or marketing decision processes. Khanna and Anton (2002) and Florida, Atlas, and Cline (2001) were interested in firms’ incorporation of natural environment concerns in production methods. They used the terms “Environmental Management System” (EMS) and “Environmentally Conscious Manufacturing” (ECM) respectively to refer to corporate environmentalism. Varadarajan (1992) and Menon and Menon (1997) focused on environmental concerns in firms’ marketing decisions and practices. Varadarajan (1992) originated the term “Enviropreneurial Marketing” (EM) to represent the concept. Other studies, such as those by Henriques and Sadorksy (1996) and Sharma (2000), limited their focus neither to manufacturing nor marketing. They defined corporate environmentalism to encompass the “general operation” of firms.

Corporate environmentalism at the “system” level goes beyond the product and process levels. Natural environmental concerns are issues incorporated in firms’ internal activities (i.e., manufacturing, marketing, financing, human resource management, purchasing, etc.) as well as activities in coordination with external organizations (i.e., suppliers, distributors, financial institutions, etc.) (Chamorro and Bañegil, 2006). At the system level, corporate environmentalism reflects natural environmental concerns over all a firm’s products, processes, and policies.

Alternatively, some scholars have differentiated corporate environmentalism according to its degree (i.e., Aragón-Correa and Sharma, 2003). Aragón-Correa and Sharma (2003) uses “Reactive Corporate Environmental Strategy” to refer to a firm’s attempts to deal with natural environmental issues as required by regulation or due to pressure from stakeholders, for example, a firm’s attempts to manage end-of-pipe pollution. They also defined “Proactive Corporate Environmental Strategy” as a firm’s efforts to redesign and modify products and operational processes according to their estimation of social trends and upcoming regulation in the future. Firms exercise proactive environmental strategy to prevent pollution before it happens.

Among the varying definitions of corporate environmentalism, Banerjee (2002) proposed the "Corporate Environmentalism" concept. The author formally tested its scale. She defined the construct as:

> "*the organization-wide recognition of the legitimacy and importance of biophysical environment in the formulation of organization strategy, and the integration of environmental issues into a firms' decision-making process*" (Banerjee, 2002: page 181).

Corporate environmentalism, according to Banerjee (2002), consists of two dimensions, Environmental Orientation and Environmental Strategies. Environmental Orientation reflects "the notion of corporate responsibility toward the environment, the importance of recognizing the impact a firm has on the environment and the need to minimize such impact" (Banerjee, 2002: page 182). The orientation encompasses a firm's internal values, ethics, and responsibilities toward internal and external stakeholders. Hence, Environmental orientation consists of internal environmental orientation and external environmental orientation. Internal environmental orientation focuses on environmental values and ethics of firms while external environmental orientation emphasizes firms' responsibilities toward external stakeholders (Banerjee, 2002). In line with the notion, Miles and Munilla (1993) conceptualized Eco-Orientation as "a construct that may describe the ecologically-oriented, latent business philosophies of environmentally sensitive organizations" (Miles and Munilla, 1993: page 48) and proposed that it would be the next business philosophy.

The second dimension of corporate environmentalism, Environmental Strategy Focus, refers to "the degree of integration of environmental issues into the strategic planning process" (Banerjee, 2002: page 182). Generally, strategic decisions can be classified into three levels: corporate strategy, business strategy, and marketing/functional strategy (Varadarajan and Jayachandran, 1999). In line with this classification, Banerjee (2002) divided the environmental strategy focus into two: environmental corporate strategy and environmental business/marketing strategy. Environmental corporate strategy refers to decision making at the corporate level, for

example, decisions on design and development of new products and/or new plant, on development of new technology, on investments in research and development, and etc. (Banerjee, et al., 2003; Banerjee, 2002). Environmental business/marketing strategy includes decisions at the functional level, for instance, decisions on selection of target markets, product positioning, promotion and advertising campaigns, etc. (Banerjee, et al., 2003).

Banerjee's (2002) "Corporate Environmentalism" construct encompasses values, ethics, responsibilities, and strategic decisions at the product, process, and policy levels of firms; therefore, it is the focal construct in this research.

2.2. Antecedents of Corporate Environmentalism

Researchers have made enquiries as to the antecedents of corporate environmentalism. The studies utilized several theoretical bases to identify the influencing factors. This subsection reviews the studies on corporate environmentalism according to the theories used.

2.2.1. Corporate Environmentalism and the Political Economy Framework

A group of researchers have used the political economy framework to specify the precursors of corporate environmentalism (e.g., Banerjee et al., 2003; Menon and Menon, 1997; Langerak et al., 1998). Table 2.2 summarizes the factors. The political economy perspective argues that, within a social system, there exist "interacting sets of major economic and sociopolitical forces which affect collective behavior and performance" (Stern and Reve, 1980: page 53). The economic and sociopolitical forces have been further categorized into four groups: internal economy, internal polity, external economy, and external polity (Stern and Reve, 1980; Menon and Menon, 1997; Banerjee et al., 2003).

Organizational structure and competitive advantage have been identified as the internal economy factors influencing corporate environmentalism. Menon and Menon (1997) contended that firms developed an organizational structure suitable to allow their business operations and productions to function efficiently. Three major types of organizational structures are specialization (or departmentalization), centralization, and formalization. Although each type of the organizational structure was hypothesized to have an impact on corporate environmentalism, the direction of its influence was not identified. Banerjee et al. (2003) argued that corporate environmentalism help develop firms' competitive advantages (i.e., product differentiation, cost reduction, material substitution, etc.). Banerjee et al. (2003) found empirical support for the contention that the greater the degree of competitive advantage of firms, the higher the level of corporate environmentalism, specifically in high environmental impact industries (i.e. pharmaceuticals, utilities, manufacturing, and chemicals) and in moderate impact industries (i.e. services, consumer products, and foods).

Seemingly, three groups in a firm's internal polity influence corporate environmentalism: marketers, top management, and converts. Because the market opportunity of green products is risky (Crane, 2000), marketers have to exert their personal environmental consciousness into decision making on marketing a green product/service. However, Langerak et al. (1998) did not find supporting evidence for the argument. They explained that the marketers lacked knowledge and were unable to develop and implement the green marketing programs. On the other hand, top management is the key group influencing corporate environmentalism (e.g., Banerjee et al., 2003; Menon and Menon, 1997). Top management not only perceives, interprets, and evaluates pressures from external forces, for example, the public and regulatory agencies, but also responds to it (Banerjee et al., 2003). Banerjee et al. (2003) found the higher the degree of top management's commitment to environmentalism, the greater the degree of corporate environmentalism. The last group in the internal polity who possibly influences corporate environmentalism is the converts. Converts refer to those who were initially opposed to corporate environmentalism, but later switched to support it (Drumwright, 1994). Menon

Table 2.2: Corporate Environmentalism and the Political Economy Framework

Study	Political Economy Framework			
	External Polity	**External Economy**	**Internal Polity**	**Internal Economy**
Banerjee, Iyer, and Kashyap (2003)	Public Concern (partially sig.)	Regulation Force (added costs) (partially sig.)	Top Management Commitment (sig.)	Competitive Advantage (i.e., material substitution and cost reduction) (sig.)
Langerak et al. (1998)	Consumer Sensitivity Regulatory Intensity (sig.)	Competitive Intensity (partially sig.)	Marketers' Environmental Consciousness	Business Sensitivity to Environmentalism (partially sig.)
Menon and Menon (1997) (conceptual paper)	Regulatory Intensity Consumer Environment Sensitivity	Competitive Intensity Attractiveness of Market Opportunity	Top Management Sensitivity Power Base of the Converts	Organizational Structure • Specialization • Centralization • Formalization

and Menon (1997) proposed that the power of converts in firms influenced corporate environmentalism; however, it depended on the magnitude of their power.

Menon and Menon (1997) recognized competitive intensity and the attractiveness of green market opportunities as the external economy forces influencing corporate environmentalism. Firms may differentiate their products by adding green attributes to attract the environmentally conscious consumers (Crane, 2000). Consumer preference for environmentally-friendly products in the main-stream market is still a challenge.

Elements of the external polity influencing corporate environmentalism include regulation and public concern for the environment. Regulation has been widely studied as a force for corporate environmentalism (e.g., Menon and Menon, 1997; Menon et al., 1999; Porter and van der Linder, 1995a; Banerjee et al., 2003; Henriques and Sadorsky, 1996). Langerak et al. (1998) and Banerjee et al. (2003) empirically found that regulatory force was a force influencing corporate environmentalism. The UK's Ethical Consumer and the US's Co-op America are visible examples of non-profit organizations representing public concerns on natural environmental issues. They monitor and report any misconduct by firms, particularly multinational companies.

In sum, the political economy framework successfully assisted researchers to point out forces influencing corporate environmentalism. The empirical studies suggested that regulatory force and top management's commitment to environmentalism seemed to be significant factors. In spite of the apparent success, one concern regarding with the framework needs to be addressed. By using the framework, factors are classified into four categories. This possibly leads to a tautology problem. On the one hand, Banerjee et al. (2003) argued that competitive advantage, as an internal economy force, positively influenced corporate environmentalism. On the other hand, Hart (1995), Aragón-Correa and Sharma (2003), and Sharma and Vredenburg (1998) contended that corporate

environmentalism increased competitive advantage. The political economy perspective does not prevent circular reasoning.

2.2.2. Corporate Environmentalism and Stakeholder Theory

Stakeholders refer to those who affect and/or are affected by firms (Banerjee, 2001; Freeman, 1984). This definition was criticized, however, for being too general and because not all stakeholders are important to firms (Banerjee, 2001; Strenberg, 1997). Henriques and Sadorsky (1996) seemingly brought in a more complete set of stakeholders influencing corporate environmentalism (see Table 2.3). The study classified stakeholders into three groups. First, organizational stakeholders are employees, consumers, suppliers, and shareholders. Second, regulatory stakeholders are governmental agencies. Community stakeholders consist of environmental organizations, lobby groups, and the neighboring community. The authors, in a further study, added the media, competitors, and informal networks as stakeholders of firms (Henriques and Sadorsky, 1999).

Empirically, Henriques and Sadorsky (1999) examined how firms classified in four types of environmental practice perceived the importance of stakeholder groups. It was found that the accommodative firms perceived “regulation” as the most important, followed by the proactive, defensive, and, lastly, reactive firms. Bansal and Roth (2000) explained how reactive firms perceived the importance of regulation. They found that the reactive firms more often decided on pursuing green goals because they wanted to be compliant with regulation. Compliance with regulation enabled them to continue their operation, reduce costs (i.e., fines and penalties), and avoid non-compliance charges. In addition, the reactive firms in Bansal and Roth’s (2000) study further stated that they also perceived pressure from the local community, customers, and institutional norms. In short, stakeholder theory assists researchers in identifying stakeholders who influence corporate environmentalism; however, the importance of stakeholders varies. The next subsection reviews another approach to studying corporate environmentalism.

Table 2.3: Corporate Environmentalism and Stakeholder Theory

Study	Stakeholder Theory							
	Regulation	**Customer**	**Shareholder**	**Employee**	**Supplier**	**Media**	**NGO and Community**	**Others**
Henriques and Sadorsky (1996)	Regulation Pressure (sig.)	Customer Pressure (sig.)	Shareholder Pressure (sig.)	Employee Pressure	Supplier Pressure		Neighborhood/community (sig.) Environ. Organizations, Lobby Groups	Cost of Environ. Controls Achievement of Efficiency Gains Importance of Environ. Issues in 5 Years
Henriques and Sadorsky (1999)	Regulatory stakeholders: (pressure from regulations, trade associations, informal networks, and competitors)					Media: (pressure from newspaper, television, radio, and etc.)	Community Stakeholders: (pressure from community groups, environmental organizations, and other lobby groups)	Organizational stakeholders: (pressure from customers, suppliers, employees, and shareholders)

2.2.3. Corporate Environmentalism and the Resource-Based View

The natural resource-based view proposed by Hart (1995) is an extended theoretical perspective from the resource-based view. Table 2.4 summarizes studies on corporate environmentalism using the natural resource-based view and/or the resource-based view (i.e., Aragnón-Correa et al., 2008; Sharma et al., 2007; Sharma and Vredenburg, 1998; Manguc and Ozanne, 2005). The resource-based view argues that firms' competitive advantage can be obtained through their valuable and rare resources and capabilities and that the competitive advantage becomes sustainable when the resources and capabilities are difficult to replicate (Barney, 2001). The studies (i.e., Aragnón-Correa et al., 2008; Sharma et al., 2007; Sharma and Vredenburg, 1998; Manguc and Ozanne, 2005; and Baker and Sinkula, 2005) viewed corporate environmentalism as a unique resource and capability enabling firms to gain competitive advantage. Aragón-Correa et al. (2008) and Sharma et al. (2007) found that shared vision, stakeholder management capability, strategic proactivity, and continuous innovation were the valuable resources and capabilities which positively influenced corporate environmentalism.

However, researchers pointed out some limitations of the resource-based view. Oliver (1997) argued that resource-based view focused exclusively on the internal resources and capabilities of firms and disregarded external factors from the analysis. To deal with the shortcoming, Aragón-Correa and Sharma (2003) proposed the "contingency resource-based view." They contended that the facets of the general business environment, for example, uncertainty, complexity, and munificence, moderated the rapport between resources and capabilities and proactive corporate environmental strategy.

To illustrate, managers are the agents who interpret the business environment where both threats and opportunities are present. It is also managers who develop and modify firms' capabilities according to the extant threats or opportunities. Managers perceive the environment as uncertain or a threat when they do not completely understand the effect of environmental circumstances on firms. Aragón-Correa and

Table 2.4: Corporate Environmentalism and the Resource-Based View

Study	Resource-Based View Variables
Aragon-Correa, Hurtado-Torres, Sharma, and Garcia-Morales (2008)	• Shared Vision (sig.) • Stakeholder Management Capability (sig.) • Strategic Proactivity (sig.)
Sharma, Aragon-Correa, and Rueda-Manzanares (2007)	• Shareholder Engagement (n.s.) • Strategic Proactivity (sig.) • Continuous Innovation (sig.)
Menguc and Ozanne (2005)	Natural Environmental Orientation (a second-order construct) • Entrepreneurship (sig.) • Corporate Social Responsibility (sig.) • Environmental Commitment (sig.)
Baker and Sinkula (2005)	Enviropreneurial Marketing (a resource: a second-order construct) • Environment as Opportunity (fixed parameter) • Environment as Commitment (sig.) • Environment as Righteousness (sig.)
Aragon-Correa and Sharma (2003) (conceptual paper)	• Relationships between resources and capabilities of firms and their proactive corporate environmental strategy are moderated by dimensions of environment (i.e., state, effect, and response uncertainty, complexity, and munificence). • Relationship between firms' proactive corporate environmental strategy and competitive advantage are moderated by dimensions of environment (i.e., state, effect, and response uncertainty, complexity, and munificence).
Sharma and Vredenburg (1998)	• Proactive Environmental Responsiveness Strategy => Organizational Capabilities (sig.) • Organizational Capabilities => Competitive Benefits (sig.)

Sharma (2003) and Milliken (1987) called this “effect uncertainty.” Effect uncertainty means managers are in a difficult situation when allotting resources and capabilities to counteract the uncertainty. However, for managers who understand how the environment affects them, it is easier to manage the business in response to external change. In short, the strategic decisions of firms (i.e., corporate environmentalism) depend on managers’ perceived (effect) uncertainty about the business environment.

Sharma et al. (2007) empirically tested Aragón-Correa and Sharma’s (2003) contingency resource-based view model and found that the perceived uncertainty of general business environment moderated the relationship between stakeholder management and continuous innovation and proactive environmental strategy, but did not moderate the relationship between strategic proactivity and the strategy.

2.2.4. Corporate Environmentalism and the Combination of the Resource-Based View and Institutional Theory

To take into account the limitations of resource-based view, in that it excludes the influence of external factors, a different research stream combines the perspective with institutional theory (e.g., Bansal, 2005; Oliver, 1997). Institutional theory argues that “firms operate within a social framework of norms, values and taken-for-granted assumptions about what constitutes appropriate or acceptable economic behaviors” (Oliver, 1997: page 699). Firms are bounded by not only technology, information, and income but also social constraints (Oliver, 1997). Firms act in compliance with social restrictions in order to ensure their legitimacy, survival, and social approval (Oliver, 1997; Bansal, 2005). Jennings and Zandbergen (1995) and DiMaggio and Powell (1983) classified the institutional pressures into three types: coercive (i.e., fines and penalties), mimetic (i.e., replicating the organizational structures and business activities of the similar organizations), and normative (i.e., social norms directing what are proper activities).

In an empirical study explaining firms’ sustainable development practices, Bansal (2005) incorporated institutional theory with the resource-based view into the

study. From the resource-based view, international experience, capital management capability, and organizational slack were identified as having an influence on sustainable development. Based on institutional theory, fines and penalties, mimicry, and media attention were proposed to have an influence on the practice.

Up to this point, institutional theory and stakeholder theory, as reviewed earlier, are alike. Fines and penalties from institutional theory are imposed on firms by government agencies, a stakeholder group, through laws and regulations. Firms mimic competitor stakeholders' sustainable development practices in order to share those successes from the practices and minimize the risks from public investigation (Bansal, 2005). Finally, Bansal's (2005) media stakeholders are major agents who propagate the environmental movement and, thus, establish environmental standards for firms.

Unlike institutional theory and stakeholder theory, that seem to be similar in explaining corporate sustainable development and/or corporate environmentalism, institutional theory and the strategic management perspective are distinctive in their explanation of the characteristics and objectives of firms' behaviors (i.e., corporate sustainable development or corporate environmentalism). Oliver (1997) contended that firms' behaviors under institutional theory were "compliant, habitual, unreflective, and socially defined…. [The behaviors] tend to be enduring, socially accepted, resistant to change, and not directly reliant on rewards or monitoring for their persistence" (Oliver, 1997: page 699), whereas firms' actions under the strategic management perspective were "rational and economically justified" (Oliver, 1997: page 699). In other words, they are undertaken to obtain competitive advantage (Varadarajan and Jayachandran, 1999; Aragón-Correa and Sharma, 2003).

In conclusion, firms' actions (i.e., sustainable development or corporate environmentalism) under institutional theory result from managers' perceptions of pressures constituted by external sources. Although they are welcomed and accepted by the public, they do not originate from their own determination with an economic rationale. The actions are opposed to sustainable development or corporate

Table 2.5: Summary of the Antecedents of Corporate Environmentalism

Antecedents of Corporate Environmentalism Adoption Classified by Theoretical Base			
Political Economy Framework	**Stakeholder Theory**	**Resource-Based View**	**The Combination of Resource-Based View and Institutional Theory**
Internal Economy • Organization Structure Centralization Specialization Formalization • Competitive Advantage *1 (sig.) • Business Sensitivity to Environmentalism *2 (partially sig.)	**Organization Stakeholder** • Employees • Consumers *3 (sig.) • Suppliers • Shareholders *3 (sig.) • Competitors	• Shared Vision *4 (sig.) • Stakeholder Management *4 (sig.) • Strategic Proactivity *4 (sig.) • Continuous Innovation *4 (sig.) Natural Environmental Orientation (a second-order construct) • Entrepreneurship • Corporate Citizenship • Environmental Commitment Enviropreneurial Marketing (a second-order construct) • Environment as Opportunity • Environment as Commitment • Environment as Righteousness	**Resource-Based View** • International experience *5 (sig.) • Capital Management Capacity • Organization Slack
Internal Polity • Top Management Commitment *1 • Marketers' Environmental Consciousness • Power Bases of the Converts	**Regulatory Stakeholder** • Government (regulation pressure) *3 (sig.)		**Institutional Theory** Coercive • Fines and Penalties Mimetic • Mimicry *5 (sig.) Normative • Media Attention *5 (sig.)

Table 2.5: Summary of the Antecedents of Corporate Environmentalism (Continued)

Antecedents of Corporate Environmentalism Adoption Classified by Theoretical Base			
Political Economy Framework	**Stakeholder Theory**	**Resource-Based View**	**The Combination of Resource-Based View and Institutional Theory**
External Economy • Regulation Force *1 (partially sig.) • Competitive Intensity *2 (partially sig.) • Attractiveness of Market Opportunity **External Polity** • Consumer Environmental Sensitivity • Regulatory Intensity *2 (sig.) • Public Concern *1 (partially sig.) *1 Significant variables from Banerjee et al.(2003) *2 Significant variables from Langerak et al.(1998)	**Community Stakeholder** • Environment Organizations • Lobbyists • Neighbor Community *3 (sig.) • Media • Informal Networks *3 Significant variables from Henriques and Sadorsky (1996)	*4 Significant variables from Aragón-Correa et al. (2008) and Sharma et al. (2007)	**Time-Related Effects** Institutional Variables • Declining Impact of Media *5 (sig.) • Declining Fines and Penalties • Increasing Importance of Mimicry **Resource-Based Variables** • International experience, capital management capacity, and organizational slack were proposed to explain corporate sustainable development practices in early and later time periods. A declining importance of organizational slack was found *5 (sig.) *5 Significant variables from Bansal (2005)

environmentalism under marketing strategy, strategic management, and the resource-based view under which they are viewed as intended to obtain competitive advantage.

Having reviewed studies on corporate environmentalism based on various theoretical bases, it can be concluded that both internal and external factors of firms have an influence on firms' actions, in this particular case, corporate environmentalism. As corporate environmentalism is considered a strategy, it is intended to seek competitive advantage. Table 2.5 summarizes the identified antecedents of corporate environmentalism according to the theoretical perspectives. The next subsection reviews the consequences of corporate environmentalism.

2.3. Consequences of Corporate Environmentalism

> "Successful corporations need a healthy society…. At the same time, a healthy society needs successful companies."
>
> Porter and Kramer (2006: page 83)

Literature on corporate sustainability and sustainable development supports the view that firms pursue not only economic wealth but also environmental and social well-being for the environment in which firms operate (Porter and Kramer, 2006; Bansal, 2005; Dyllick and Hockerts, 2002; Lo and Sheu, 2007). Dow Jones Sustainability Indexes, operated by SAM indexes GmbH, defines corporate sustainability as "a business approach that creates long-term shareholder value by embracing opportunities and managing risk deriving from economic, environmental and social developments" (Dow Jones Sustainability Indexes, 2009: online). This subsection discusses the definition of different types of performance and the effect of corporate environmentalism on each performance outcome.

2.3.1. Economic Performance

Aragón-Correa and Sharma (2003) contended that corporate environmentalism enabled firms to gain such competitive advantages as first mover advantage and differentiation advantage, resulting in a better economic performance. Table 2.6 and Table 2.7 present the economic and non-economic consequences of corporate environmentalism. The economic consequences of corporate environmentalism investigated includes sales growth, profit growth, increase in market share, return on investment, increase in stock price, new product success, an ability to charge higher price, cost reduction, and higher turnover. Using objective measures from secondary data, Menguc and Ozanne (2005) found a positive effect of natural environmental orientation on profit and market share. However, a negative sales growth was unexpectedly found in the same study. Similarly, Langerak et al. (1998) investigated two green marketing strategies: green product and green communication. They found that green communication did not have an impact on business performance, but green product had. The green product strategy enabled firms to charge a higher price, experience a higher sales turnover, and reduce costs.

Empirical studies reveal the ambiguity of the effect of corporate environmentalism on economic performance. Although evidence does not indicate a definite relationship between corporate environmentalism and its economic consequences, a positive relationship can be witnessed (Aragón-Correa et al., 2008). However, Mathur and Mathur (2000) expected a difference. They investigated investors' reaction through stock price movement after firms' announcement of four types of green marketing activities. Note that investors are organizational stakeholders pressuring firms to implement corporate environmentalism. The studied green marketing activities were (1) announcement of green products, (2) recycling campaign, (3) green promotion, and (4) appointment of environmental policy managers. They proposed that investors would not take any action in response to the "green marketing" announcement (null hypotheses). The data was from public companies whose stocks were traded in the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX), and the National Association of Security Dealers

Table 2.6: Corporate Environmentalism and its Economic Performance

Study		Economic Performance						
	Sales growth	**Profit/Earning Growth**	**Market share**	**ROI**	**Financial Performance (Earning Growth and Return to Investment)**	**Stock Price**	**New Product Success**	**Ability to Charge a Higher price/Cost Reduction/Higher Turnover**
Aragón-Correa, Hurtado-Torres, Sharma, and Garcia-Morales (2008)					(+, supported)			
Menguc and Ozanne (2005)	(+, found sig. negative	(+ , supported)	(+ , Supported)					
Baker and Sinkula (2005)			(+, supported)				(+, supported)	
Mathur and Mathur (2000)						(no relationship, supported and a negative relationship found)		
Langerak et al. (1998)								(+, partial supported)
Menon et al. (1999)			(+)	(+)				

Table 2.7: Corporate Environmentalism and its Non-Economic Performance

Study	Non-Economic Performance							
	Corporate Image	**Brand Image**	**Customer Loyalty**	**Corporate Citizenship**	**Resistance to Negative Publicity**	**Organizational Capability**	**Competitive Advantage**	**Barriers to Entry**
Aragón-Correa and Sharma (2003)							X	
Sharma and Vredenburg (1998)						(+, Supported)	(+, Supported)	
Menon and Menon (1997)	X	X					X	X
Menon et al. (1999)		X	X	X	X			

Automated Quotation system (Nasdaq) from 1989 to 1995. The resulting evidence showed that investors did not favorably respond to the green activities announcements. Mathur and Mathur (2000) found that announcements of green products, recycling, and appointment of environmental policy managers were neither welcomed nor disapproved of by investors. Green promotion was followed by an evident decrease in stock price.

Hart (1995) explained that, to realize the economic benefits of corporate environmentalism, managers should take a long-term view due to the fact that corporate environmentalism requires investments of and collaborative endeavor within firms.

2.3.2. Social Performance

Social performance covers a wider range of issues. In studying corporate sustainable development, Bansal (2005) explained social equity as where “all members of society have equal access to resources and opportunities” (Bansal, 2005: page 198). This includes current and future generations in society and the resources and opportunities mean not only possessions for basic subsistence such as food, clothing, housing, etc., but also access to things in maintaining a proper quality of life such as health care, education, employment, etc. (Bansal, 2005).

More specifically, Ranganathan (1998) identified elements of corporate social performance including (1) employment related issues (i.e., working environment, job security, fair employment), (2) community relations (i.e., job creation, philanthropy, and employee volunteerism), (3) ethical sourcing or fair trade, and (4) social impact of product (i.e., social welfare, equity, shelter, health care). A Dow Jones Sustainability Indexes questionnaire asks companies to report their social performance on (1) labor practice, (2) human resource development, (3) talent attraction & retention, (4) corporate citizenship/philanthropy, and (5) social reporting (Dow Jones Sustainability Indexes, 2009: online). Lamming et al. (1999) cautioned that it was not feasible to expect firms to undertake action on all possible social issues

imposed by sustainable development. Firms are not designed or well-equipped to deal with all those issues. However, the authors argued that firms could reasonably engage in social affairs in relation to their business activities such as employment, wages, working environment, etc.

Hillman and Keim (2001) found evidence showing that firms were better off when engaging in social issues related to their business activities. The study investigated the relationship between social performance and financial performance; whether social performance enhanced financial outcomes or vice versa. Two aspects of social performance in the study were stakeholder management and social issue management. Stakeholder management means firms' ability to manage relationships with their stakeholders such as employees, the neighboring community, or the natural environment. Competitive advantage can be derived from managing the relationships, a capability of firms (Hillman and Keim, 2001). Social issue participation represents firms' involvement in social issues beyond those related to their primary stakeholders, for example, issues about alcohol, tobacco, gambling, nuclear power, the military, etc. (Hillman and Keim, 2001). Results of the study supported that stakeholder management enhanced financial performance like Market Value-Added (Market Value – Capital) whereas social issue participation was negatively related to financial performance. Hence, the authors concluded that corporate social performance had a positive influence on economic performance as long as the social performance involved social activities in relation to the firm's primary stakeholders.

As for the positive effect of corporate environmentalism on social performance, scant case studies have suggested the possibility of the relationship. Lamming et al. (1999) introduced the term, "Environmental Soundness," referring to "an interest in the interaction between economics and the environment but [one that] does not compel the integration of matters to do with social justice" (Lamming et al., 1999: page 183). From the definition, environmental Soundness is similar to corporate environmentalism. The authors argued that through "Environmental Soundness", firms were likely to achieve social equity. As they stated, "it is likely that a strategy based on environmental soundness will have a major and beneficial impact on social

justice without specifically targeting it" (Lamming et al., 1999: page 186). Other case studies also supported the argued relationship. Based on a study of seven water and sewerage and electricity distribution companies in the UK, Schaefer (2004) found that the companies' environmental managers contributed mostly not only to environmental issues but also to social issues, leading to improvement in the social performance of firms. Likewise, Dunphy (2003) found that a better working environment at the new Fuji Xerox Eco Manufacturing Plant in Zetland, Sydney, occurred after redesigning plant and plant organization, re-training personnel, and implementing a new plant culture.

2.3.3. Environmental Performance

The notion that corporate environmentalism improves environmental performance seems to be logical. To implement corporate environmentalism, firms integrate natural environment issues into their decision making and business activities. It intentionally aims at improving environmental performance. Consequently, the key issue here is the definition of environmental performance.

Conceptually, Bansal (2005) refered to environmental integrity as the protection of land, air, and water resources. In other words, firms' operations and activities do not cause a deterioration of these natural environmental elements. Similarly, Labuschagne et al. (2005) proposed an operational sustainability framework including environmental performance in four criteria: land, air, water, and mineral and energy resources.

To be more specific at the corporate level, Ranganathan (1998) presented Dits and Ranganathan's (1997) four components of corporate environmental performance: (1) material use, (2) energy use, (3) waste management, and (4) pollution discharge. Corporate environmentalism supposedly improves environmental performance in these four criteria.

The literature reviewed above suggests that corporate environmentalism possibly improves the economic (or marketing), social, and environmental performance of firms. This is not intended to mean that corporate sustainability is achieved. Rather, corporate environmentalism refers to the process of moving toward sustainable development.

Corporate environmentalism represents decisions and activities that make it possible for firms to achieve a competitive advantage and to improve their performance (Varadarajan and Jayachandran, 1999). The strategic choices are influenced by both internal and external factors (Varadarajan and Jayachandran, 1999). The next portion of this chapter reviews the external factors and how they influence firms' strategic choices.

2.4. The Environment

Corporate environmentalism is a strategic choice firms make as a response to natural environment concerns, one of the external factors affecting firms' choices. This section reviews previous literature on the environment.

2.4.1. The Environment: Definition, Conceptualization, and Dimensions

Kotler and Keller (2006) named the natural environment as one of the six forces that had an impact on firms. Depletion of raw materials, rising energy costs, anti-pollution pressures, and the role of government bodies exemplify some of the impacts of natural environment on firms (Kotler and Keller, 2006).

Environment, defined by Duncan (1972: page 314), is "the totality of physical and social factors that are taken directly into consideration in the decision-making behavior of individuals and in the organization." Information Uncertainty and Resource Dependence Theory are two perspectives used to conceptualize the environment (Kreiser and Marino, 2002; Freel, 2005). Based on the perspective that the environment is a source of information, Milliken (1987) argued that

"environmental uncertainty" was "the state of a person who perceives himself/herself to be lacking critical information about the environment" (Milliken, 1987: page 134). It is due to the fact that decisions are made under the condition of "bounded rationality" (Kreiser and Marino, 2002: page 896), resulting in firms being unable to completely comprehend the surrounding elements and being constrained to making decisions under the available information (Kreiser and Marino, 2002). The environment, thus, is a source of threats and/or opportunities, depending on firms' perceptions of the environment (Kreiser and Marino, 2002). The perceived threats and/or opportunities determine choices of action (Varadarajan, Clark, and Pride, 1992; Clark, Varadarajan and Pride, 1994; Kreiser and Marino, 2002).

According to the environment uncertainty perspective, the environment is described as static-dynamic and/or simple-complex (Duncan, 1972; Freel, 2005). The static-dynamic dimension is defined as the speed of change of components in the environment (Duncan, 1972; Kreiser and Marino, 2002). The greater the speed of change, the higher the degree of environment uncertainty is. The second dimension, simple-complex, refers to the number of considered factors present in the environment (Duncan, 1972). A simple environment means that the number of factors external to firms is a few while a complex environment refers to a greater number of external factors. Hence, a simple environment poses less uncertainty than a complex environment does.

The second perceptive, resource dependence theory, conceptualizes the environment as a supply of resources required by firms (Kreiser and Marino, 2002). Because firms' operations and activities depend very much on resources, control over resources alleviates threats to firms. A higher level of threat reflects the inability of firms to control the environment, resulting in high uncertainty. Subsequently, conceptualizing the environment based on resource dependence theory results in the third dimension of the environment, munificence. Munificence is defined as availability of resources in the environment for firms (Tan, 1996). The oil price crisis is an obvious example of environmental munificence. Countries that have an access to the resource face a lower threat level or lower uncertainty.

In addition to these three dimensions of environment, another dimension, turbulence, is also prevalent in the literature. Market turbulence is defined as "the rate of change in the composition of customers and their preferences" (Jaworski and Kohli, 1993: page 57). Likewise, technological turbulence is "the rate of technological change" (Jaworski and Kohli, 1993: page 57). Some researchers use the term "market turbulence" to encompass competitor behavior. For instance, Calantone, Garcia, and Dröge (2003) defined market turbulence as "continuous changes in customers' preferences/ demands, in price/cost structures, and in the composition of competitors" (Calatone, Garcia, and Dröge, 2003: page 92). Milliken (1987) differentiated turbulence (or volatility, variability) from uncertainty. It is possible that environment changes rapidly, but changes in a predictable way. In this circumstance, turbulence occurs but uncertainty is less likely to happen (Milliken, 1987).

2.4.2. The Environment: Perception (versus Objectivity), Type, and Source

Kreiser and Marino (2002) argued that environment uncertainty emphasizes managers' perceptions of the environment whilst conceptualization of the environment based on resource dependency theory focused on objective estimation of environment. Phua, (2007) contended that objective attributes of the external environment were less critical in shaping firms' strategic actions because the attributes were assessed and interpreted by managers in order to arrive at the implications of the environment for the firms. Alternatively, firms respond to environmental factors that they perceive as relevant and important. To illustrate the importance of managers' interpretations of the external environment, White, Varadarajan, and Dacin (2003) empirically found that marketing managers' cognitive style, organizational culture, and information use played a role in their interpretation of market situation and that the interpretation, in turn, influenced the size of the advertising and promotion budget. Therefore, it can be concluded that firms' behaviors are influenced by perceived environment uncertainty.

Kreiser and Marino (2002) elaborated that, according to resource dependency theory, the amount of resources available to firms was factual; thus, objective estimation should be taken. Resource munificence means the actual condition of the environment available to firms. Thus, the objective estimation of environmental munificence assists firms to properly judge their dependency on the resource, resulting in reducing their environment uncertainty.

2.4.2.1. The Type of Perceived Environment Uncertainty

Milliken (1987) emphasized the types of environment uncertainty. The author proposed that perceived uncertainty about the environment consisted of three different components: state uncertainty, effect uncertainty, and response uncertainty.

The perceived "state" uncertainty occurs when firms "perceive the organizational environment, or a particular component of that environment, to be unpredictable" (Milliken, 1987: page 136). It reflects the degree of understandability of the environment and/or its elements. For example, firms might not understand the actions of their stakeholders (i.e., competitors, consumers, or government). The perceived "effect" uncertainty means that firms are unable "to predict what the nature of the impact of a future state of the environment or environmental change will be on the organization" (Milliken, 1987: page 137). Perceived effect uncertainty can be simply restated as firms being uncertain about how and/or when the changing environment will affect them. For instance, Porter and van der Linde (1995a) maintained that "knowledge about environmental impacts is still rudimentary in many firms" (Porter and van der Linde, 1995a: page 99). Firms are uncertain how changes in the natural environment affect them. Perceived "response" uncertainty refers to "a lack of knowledge of response options and/or an inability to predict the likely consequences of a response choice" (Milliken, 1987: page 137). Milliken (1987) argued that threats or opportunities driving firms to act immediately could lead firms to face perceived response uncertainty.

In an empirical study, Gerloff, Muir, and Bodensteiner (1991) investigated the influence of the three components of the perceived environment uncertainty on performance. They, first, found that the perceived environment uncertainty construct could be broken up into state, effect, and response uncertainty, confirming Milliken's (1987) three types of perceived uncertainty. The study further revealed that perceived state uncertainty adversely affected the performance of US Navy R&D project managers while effect and response uncertainties also had a negative impact (but not a statistically significant one). The last issue about perceived environmental uncertainty is the source of uncertainty.

2.4.2.2. The Source of Perceived Environment Uncertainty

Song and Montoya-Weiss (2001) asserted that "uncertainty should be studied in relation to specific components of the environment in order to properly attribute its effect" (Song and Montoya-Weiss, 2001: page 61). Sources of environment uncertainty include customers, competitors, suppliers, capital markets, regulation, and labor unions (Miles and Snow, 1978). Armstrong and Kotler (2009) classified the environment into two categories: micro-environment and macro-environment. Micro-environment includes the company itself, customers, competitors, members in channel distribution, and suppliers, whereas macro-environment encompasses such forces cultivating threats and opportunities to firms as demographic change, economic conditions, technology, politics, culture, and the natural environment.

Following Song and Montoya-Weiss's (2001) assertion, Atuahene-Gima and Murray (2004) found a disparity between the effect of marketing uncertainty and technological uncertainty. Results from the study indicated that market uncertainty negatively moderated the effect of marketing strategy comprehensiveness (MSC) on performance while technological uncertainty positively moderated the relationship. Firms with a thoroughly formulated marketing strategy facing high market uncertainty tended to perform more poorly than firms facing low market uncertainty. However, firms with comprehensively-formulated marketing strategies facing high technological uncertainty were likely to perform better. Atuahene-Gima and Murray

(2004) explained that in response to a rapidly changing market environment, firms required real-time market information in the process of marketing strategy formulation. Unlike market uncertainty, technological uncertainty may be less sensitive to time, and technological trends are perhaps identifiable. The evidence emphasizes the different impacts of specific sources of environment uncertainty.

In relation to other sources of environment uncertainty, market uncertainty seems to be more widely studied in the literature (e.g., Luca and Atuahene-Gima, 2007; Bstieler and Gross, 2003; Jarworski and Kohli, 1993; Beckman, Haumschild, and Phillips, 2004; Olson, Slater, and Hult, 2005). The construct encompasses both uncertainty over competitors' actions and over consumer needs and preferences (e.g., Atuahene-Gima and Murray, 2004). Meanwhile, some other studies divided market uncertainty into two independent constructs and named them market turbulence and competitive intensity (e.g., Jarworski and Kohli, 1993; Olson, Slater, and Hult, 2005). The role of market uncertainty is inconclusive. In Kirca, Jayachandran, and Bearden's (2005) meta-analysis of the relationship between market orientation and firm performance, 5 out of 14 studies found a significant positive moderating role of market uncertainty on the relationship. A non-significant moderating role was found in 7 studies: the other two found an opposite sign.

Environment uncertainty includes technological uncertainty (e.g., Luca and Atuahene-Gima, 2007; Jarworski and Kohli, 1993; Olson, Slater, and Hult, 2005; Song and Montoya-Weiss, 2001). Technological uncertainty reflects the speed of change and unpredictability of technological changes (Song and Montoya-Weiss, 2001; Jarworski and Kohli, 1993). Like the moderating role of market uncertainty in Kirca, Jayachandran, and Bearden's (2005) meta-analysis, the effect of technological uncertainty is uncertain. It negatively moderated the relationship between market orientation and firm performance in one study but did not in 8 studies. Note that results from Kirca, Jayachandran, and Bearden's (2005) meta-analysis on both market uncertainty and technological uncertainty were based on frequency of the study. The nonparametric test of the variables in the study indicated insufficient evidence to make a conclusion.

Porter and van der Linde (1995a, 1995b) argued that regulation is also one of the pressures pushing firms to innovate in response to biophysical environment concerns, in addition to pressures from consumers, competitors, and raw material costs.

In sum, distinct attributes of environment uncertainty have dissimilar effects on firms. To properly explain its effect, a specific element of the environment should be examined.

Chapter III

The Proposed Models and Hypothesis Development

The chapter proposes the investigated models and develops the tested hypotheses. The models are first proposed. Then, there is a discussion of the external variables, internal variables, and consequent variables of corporate environmentalism. Hypotheses are also proposed.

3.1. An Overview of the Proposed Models

Before proceeding further, it is advisable to explain the proposed models. Three models are proposed in the current research. They differ in the effects of external factors. The effect of internal factors on corporate environmentalism and the consequences of corporate environmentalism are similarly hypothesized in all three models. The direct effect model (Figure 3.1) examines the direct effect of perceived market uncertainty and perceived regulation uncertainty on corporate environmentalism, whereas the moderating effect model (Figure 3.2) tests the effect of the two perceived uncertainties on the associations between internal factors and corporate environmentalism. Finally, the simultaneous effect model (Figure 3.3) simultaneously tests the direct effect and the moderating effect of the perceived uncertainties. All three models also incorporate three internal resources and capabilities of firms as the antecedents of corporate environmentalism into the models. The investigated resources and capabilities include relationship with external organizations, shared vision, and environmental technology capability. The last set of variables is the consequences of corporate environmentalism. Corporate environmentalism is proposed to enhance marketing, social, and environmental performance of firms.

Figure 3.1: The Direct Effect Model

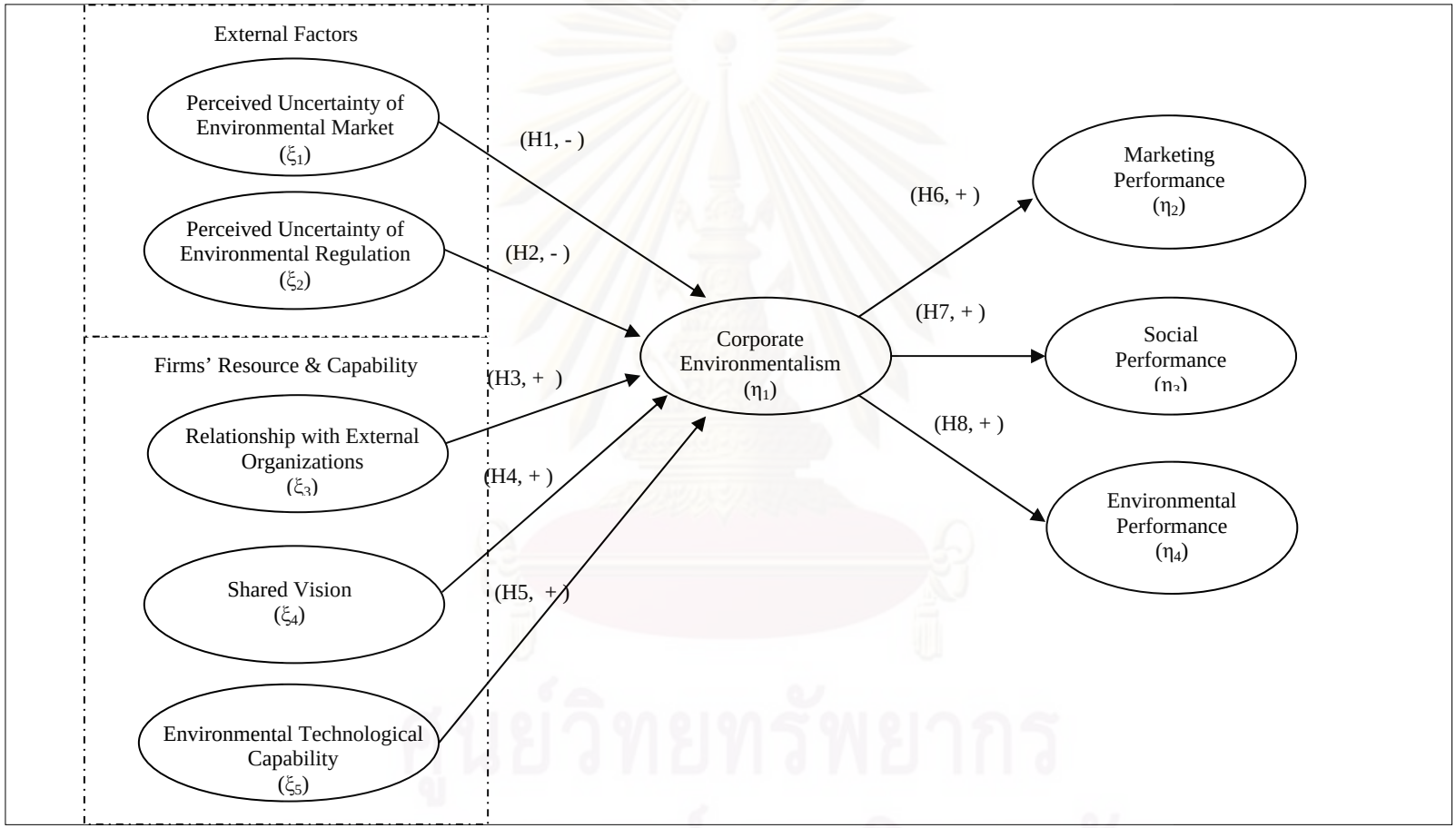


Figure 3.2: The Moderating Effect Model

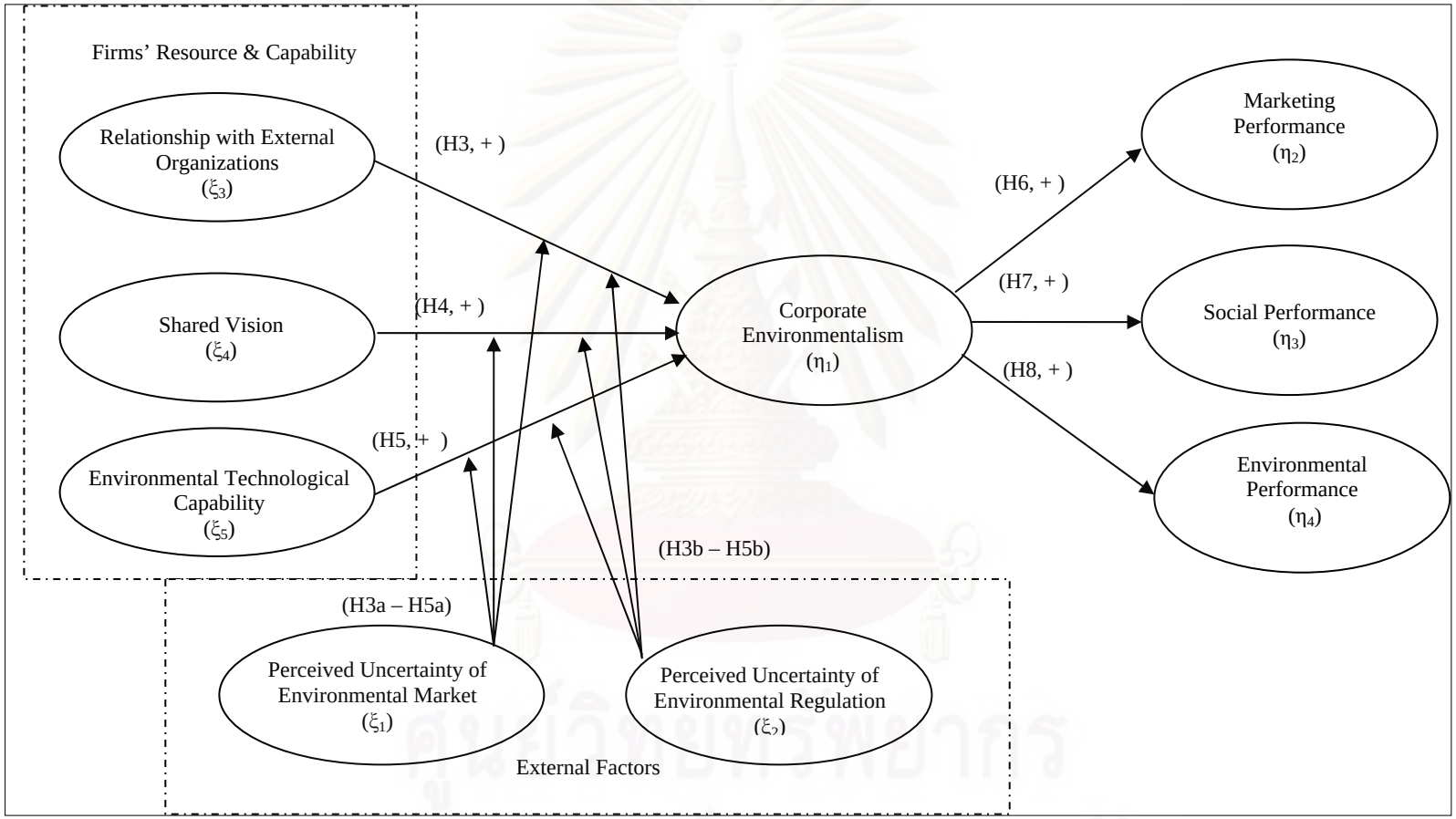
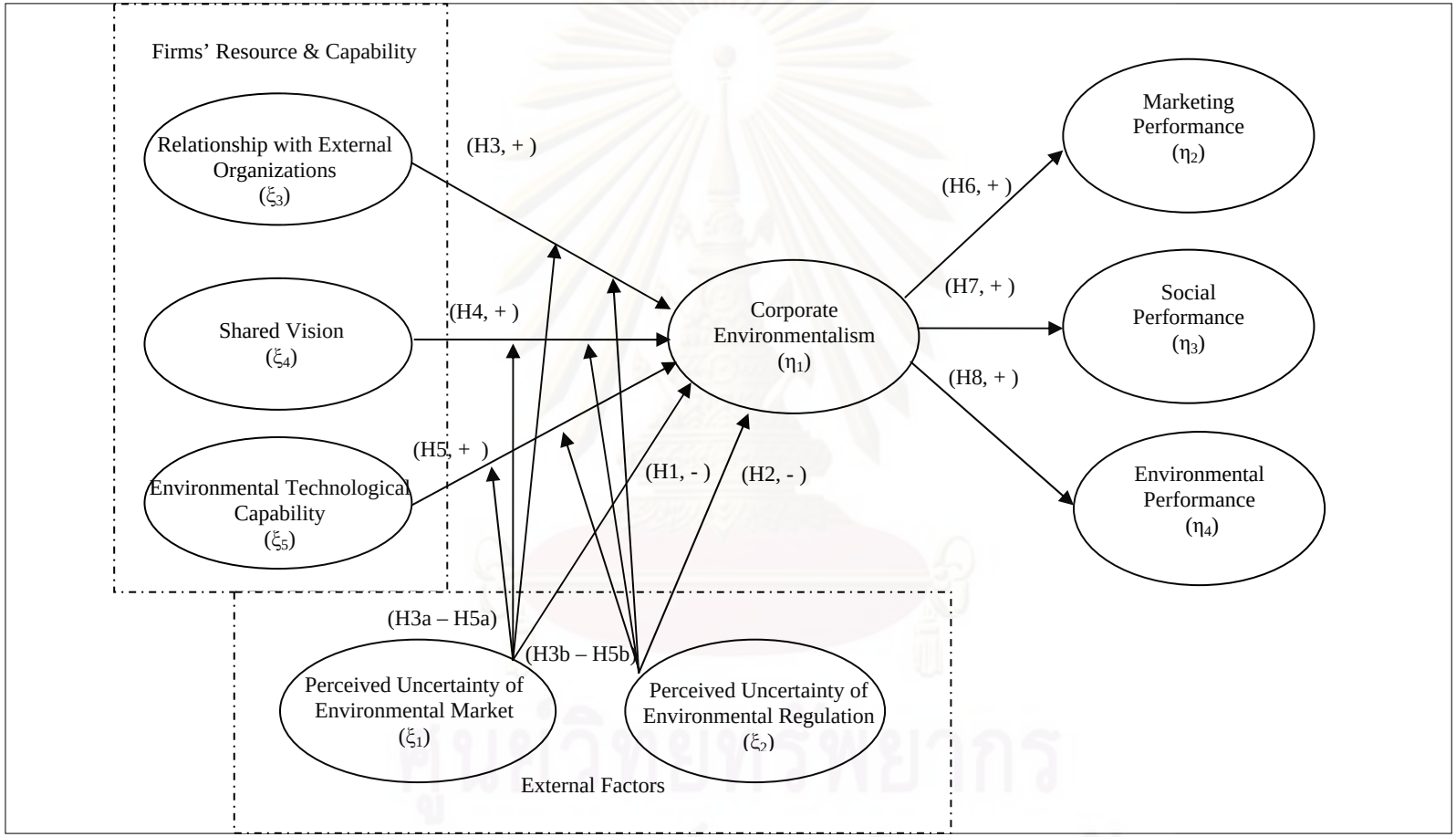


Figure 3.3: The Simultaneous Effect Model



3.2. The Perceived Uncertainty of Environmental Market

As reviewed in Chapter II, Information Uncertainty and Resource Dependence Theory are two perspectives from which the environment is viewed as a factor influencing firms' decisions and actions. The current research adopts the Information Uncertainty view to explain corporate environmentalism and specifically studies two sources of uncertainty: environmental market and environmental regulation. The following illustrates the perceived uncertainty of environmental market and the perceived uncertainty of environmental regulation.

Crane (2000) asserted that the association between attitude toward green products and purchase behavior of the green products was weak. In other words, consumer's preference for the products was not converted into actual purchase at the expected rate. Jaratpan Onghununtakul (2004) investigated Thais' green and volunteering behavior and found that attitude explained 54% of variance in behavior intention while behavior intention and knowledge together explained only 15% of variance in actual behavior. Evidence suggested that there were factors, other than intention and knowledge, determining actual behavior.

Johri and Sahasakmontri (1998) studied consumers in Thailand and found that in the purchase of cosmetics and toiletries, customers valued such prevailing product attributes as value for money, product performance, and product safety. They did not necessarily trade off the attributes for greener products (Johri and Sahasakmontri, 1998). Tanner and Kast (2003) studied Swiss consumers purchasing green food. They found that situational factors had an adverse influence on purchases. For example, when consumers were in a time-pressured situation, they were less likely to purchase green food.

Drumwright (1994) examined firms' socially responsible purchases. Among other findings, socially responsible purchase was found to be derived from personal belief in the issue. Purchase personnel had to exert their own commitment into a

purchase, in addition to economic objectives imposed by firms. Paying a higher price was usually one of the factors involved in socially responsible purchase; hence, the buying personnel, who were willing to pay the premium, had to personally take career risks (Drumwright, 1994).

The above short review of consumer environmentalism suggests that buying green is a complex behavior; many factors hinder actual green buying behavior. Thus, there exists a certain degree of unpredictability or uncertainty over the environmental markets, and demand.

Lewis and Harvey (2001) developed a scale for perceived environmental uncertainty specific to the natural environment context. One of the scale's seven dimensions is environmental products, markets, and demand. Lewis and Harvey's (2001) subscale of environmental products, market, and demand includes (1) customer environmental preferences, (2) environmental product demand, (3) availability of substitute environmental products, and (4) availability of complementary environmental products. Using Lewis and Harvey's (2001) subscale, together with Milliken's (1987) definition of perceived "state" uncertainty, the perceived uncertainty of environment market in this research, thus, is defined as the incapability of firms to comprehend and conjecture the nature of current/future consumers' preferences for environmental products, environmental product demand, and the availability of substitute and complementary environmental products in firms' product-market.

3.3. The Perceived Uncertainty of Environmental Regulation

"If regulations are complex, unclear, or subject to frequent and unpredictable changes or revision, it creates regulatory uncertainty" (Feiock and Stream, 2001: page 315). Regulation was found to be a significant pressure on corporate environmentalism (e.g., Banerjee et al., 2003; Langerak et al.,1998; Henriques and Sadorsky, 1999; Henriques and Sadorsky, 1996). To comply with regulation, firms are required to modify their business/production processes. The change involves

costs. In 1994, over $20.6 billion in operating costs and $7.8 billion in investment outlay was spent by US manufacturers to fulfill regulations (Feiock and Stream, 2001). More importantly, the spending is not reversible (Viscusi, 1983). Feiock and Stream (2001) suggested that "stringent regulation[s] but stable and certain patterns and processes of regulation may have some hope of enjoying a growing economy" (Feiock and Stream, 2001: page 315).

Lewis and Harvey (2001) also included "governmental environmental policies" as a subscale of perceived environment uncertainty due to the national environment. This recognizes the importance of regulation enforcement. Taking together Milliken's (1987) definition of perceived "state" uncertainty, Feiock and Stream's (2001) description of regulation uncertainty, and Lewis and Harvey's (2001) governmental environmental policies subscale, this research defines the perceived uncertainty of environmental regulation as the incapability of firms to comprehend and conjecture the nature of the current/future environmental regulation and enforcement imposed in firms' product-market, resulting from firms' perceptions of environmental regulation and enforcement as complicated, ambiguous, often changing, or changing in an unpredictable way.

3.4. The Effects of Perceived Uncertainty of Environment Market and Regulation

3.4.1. The Main Effect Model

Firms' strategic choices lie between two ends: environmental determinism and strategic choice (Clark, Varadarajan, and Pride, 1994). At the determinism end, Clark, Varadarajan, and Pride (1994: page 24) explained that "environmental determinism, often referred to as 'external control'…implies that organizational environments are the 'prime movers' and decision makers merely 'responders'…. Strategic choice, on the other hand, implies that decision makers are the 'prime movers."' Firms attempt to control and shape the environment. In fact, firms' strategic choices fall in between

the two ends, depending on firms' perceived environment uncertainty (Clark, Varadarajan, and Pride, 1994). In the situation where firms understand the effect of the environment on firms and what their strategic choices could do for them, firms face low perceived "effect" and "response" uncertainty. Consequently, it is expected that firms actively exercise their influence on the opportunistic environment. On the other hand, firms may hold strategic decisions or take an idle position when they are unable to comprehend the effect of the environment and are uncertain about what to do about it (Milliken, 1987). Specific to the corporate environmentalism context, studies have suggested two ends of corporate environmentalism: "reactive" and "proactive" (e.g., Aragón-Correa and Sharma, 2003; Sharma, Aragón-Correa, and Rueda-Manazanares, 2007; Sharma and Vredenburg, 1998). Aragón-Correa and Sharma (2003) defined reactive environmental strategy as "a response to changes in environmental regulations and stakeholder pressures via defensive lobbying and investments in end-of-pipe pollution control measures" (Aragón-Correa and Sharma, 2003: page 73). As for proactive environmental strategy, it was defined as engaging in "anticipating future regulations and social trends and designing or altering operations, processes, and products to prevent (rather than merely ameliorate) negative environmental impacts" (Aragón-Correa and Sharma, 2003: page 73). With this line of reasoning, it is concluded that when perceived uncertainty is low, the level of strategic action (i.e., corporate environmentalism) is high. In other words, the perceived uncertainty of environmental market and regulation adversely affect the level of corporate environmentalism.

3.4.2. The Moderating Effect Model

The moderating effect model investigates whether the perceived uncertainty moderates the relationships between firms' internal resources and capabilities and corporate environmentalism. It follows Aragón-Correa and Sharma's (2003) contingency resource-based view, in which aspects of the environment are incorporated to account for the effect. The authors argued that firms facing high perceived "effect" and "response" uncertainty were hesitant to allot their internal resources and capabilities to execute corporate environmentalism. Therefore, the

moderating effect model investigates the effect of perceived market and regulation uncertainties on the associations between the internal resources and capabilities and corporate environmentalism.

Alternatively, corporate environmentalism can be seen as a mediator. The internal resources and capabilities are exogenous variables that affect endogenous variables, the three performance outcomes of firms, through corporate environmentalism. However, the effect of exogenous variables on corporate environmentalism varies, depending on the other variables, in this case, the perceived uncertainty of environmental market and environmental regulation. Literature refers to this type of model as the "moderated mediation model" (e.g., Wu and Zumbo, 2008).

3.4.3. The Simultaneous Effect Model

The simultaneous effect model examines simultaneously the direct effect and the moderating effect of perceived market uncertainty and regulation uncertainty. Atuahene-Gima and Murray (2004), for example, tested the moderating effect of market uncertainty and technological uncertainty on the relationship between marketing strategy comprehensiveness and performance, together with their direct effect on performance.

Sharma, Durand, and Gur-Arie (1981) differentiated a pure moderator from a quasi-moderator as follows. A pure moderator is the variable solely moderating a studied relationship while a quasi-moderator is the variable moderating a studied relationship as well as directly affecting the endogenous variable (Sharma, Durand, and Gur-Arie, 1981). A quasi-moderator "not only interacts with the predictor variable, but is a predictor variable itself" (Sharma, Durand, and Gur-Arie, 1981: page 293). Thus, the simultaneous effect model tests both the direct effect and moderating effect of perceived uncertainty of environmental market and environmental regulation.

3.5. Hypothesis Development

3.5.1. External Factors: The Perceived Uncertainty of Environmental Market and Environmental Regulation

Following the proposed three models demonstrating the differing effects of the perceived uncertainty of environmental market and environmental regulation, it is hypothesized that:

H1: When the perceived uncertainty of environmental market is high (versus low), corporate environmentalism is low (versus high). In other words, the relationship between perceived uncertainty of environmental market and corporate environmentalism is negatively related.

H2: When the perceived uncertainty of environmental regulation is high (versus low), corporate environmentalism is low (versus high). In other words, the relationship between perceived uncertainty of environmental regulation and corporate environmentalism is negatively related.

Next, the influence of internal resources and capabilities of firms on corporate environmentalism is discussed and the corresponding hypotheses are proposed. The investigated internal resources and capabilities are relationship with external organizations, shared vision, and environmental technological capability.

3.5.2. Internal Resources and Capabilities

Hart's (1995) natural resource-based view and Aragón-Correa and Sharma's (2003) contingency resource-based view argued that firms acquired and allocated resources and developed capabilities in order to achieve competitive advantage. Previous literature considered corporate environmentalism a capability of firms allowing them to obtain competitive advantage (i.e., Aragnón-Correa et al., 2008;

Sharma et al., 2007; Sharma and Vredenburg, 1998; Manguc and Ozanne, 2005; and Baker and Sinkula, 2005). Newbert (2007) studied empirical research employing the resource-based view of firms and found that more than 30 capabilities were studied as sources of competitive advantage. The present research attests three resources and capabilities influencing corporate environmentalism: relationship with external organizations, shared vision, and environmental technological capability.

3.5.2.1. Relationship with External Organizations

Scholars agree that corporate environmentalism has become a prevailing element in business administration (Varadarajan, 1992; Miles and Munilla, 1993; Mathur and Mathur, 2000). Also, world leaders admit the significance of corporate environmentalism. The G8 summit, held in Japan in July 2008, announced a target of a 50% reduction of global carbon-dioxide emissions by the year 2050. In spite of the importance of corporate environmentalism, corporate environmentalism is a new circumstance. Firms are inexperienced in dealing with natural environment deterioration and corporate environmentalism. Porter and van der Linde (1995a) maintained that "knowledge about [natural] environmental impacts is still rudimentary in many firms" (Porter and van der Linde, 1995a: page 99). Moreover, the economic performance of corporate environmentalism is not assured (Bansal, 2005). Consequently, firms possibly bank on their relationship with external organizations.

Geletkanycz and Hambrick (1997) argued that external organizations were sources of information about the environment in which firms made decisions. Relationship with external organizations means management's relation with such external entities as trade associations, academic institutions, or even competitors. In maintaining relationships with external organizations, firms obtain information that could form manager's perceptions about the environment and that could exemplify strategic options (Geletkanycz and Hambrick, 1997). Ritter and Gemünden (2003) maintained that creating, maintaining, and making use of relationships with external organizations required investment processes. Following Geletkanycz and Hambrick

(1997) and Ritter and Gemünden (2003) the current research defines relationship with external organizations as the capability of firms in creating, maintaining, and making use of relationships with external organizations in order to acquire meaningful information related to the natural environment and other related issues.

Ritter and Gemünden (2003) suggested that this capability enhanced the successful rate of product and process innovation. The higher firms' capability in managing their relationship with external organizations, the more meaningful information (i.e., corporate environmentalism or knowledge about natural environmental concerns) firms acquire. Thus, it is hypothesized that:

H3: Relationship with external organizations has a positive influence on corporate environmentalism.

As for the moderating effect of perceived uncertainty of environmental market and environmental regulation on the relationships between internal resources and capabilities and corporate environmentalism, the association between relationship with external organizations and corporate environmentalism is hypothesized below.

H3a: The positive influence of relationship with external organizations on corporate environmentalism is moderated by perceived uncertainty of environmental market.

H3b: The positive influence of relationship with external organizations on corporate environmentalism is moderated by perceived uncertainty of environmental regulation.

3.5.2.2. Shared Vision

Hart's (1995) natural resource-based view conceptualized that "shared vision" was a rare resource of firms. Hart (1995) explained that to achieve a "shared vision", top management was required to exhibit strong leadership and employees within an

organization were encouraged and empowered to exercise their involvement. Shared vision leads firms to achieve the firms' goals (Hart, 1995). Successful corporate environmentalism needs a better understanding, shared objectives, and participation from employees across departments within firms (Aragón-Correa et al., 2008). The shared vision directs individual decisions, departmental objectives, and unified activities/processes of firms in supporting the set goals (Aragón-Correa et al., 2008).

Based on the resource-based view, Aragón-Correa et al. (2008) investigated environmental strategy of small automotive garages in Spain. One of the internal factors investigated was shared vision. The results of Aragón-Correa et al.'s (2008) study indicated that shared vision positively influenced environmental strategy. This current research defines shared vision as members at all levels within firms sharing the same values and objectives about environmental strategic management and practice. The definition follows Aragón-Correa et al.'s (2008) definition of shared vision, which proposed that "shared vision exists when an organization's members collectively have similar values and beliefs about its objectives and mission" (Aragón-Correa et al. 2008: page 91)**.** As suggested by the literature, this research hypothesizes a positive relationship between shared vision and corporate environmentalism.

H4: Shared vision has a positive influence on corporate environmentalism.

This research further investigates whether the hypothesized relationship is moderated by perceived uncertainty of environmental market and environment regulation.

H4a: The relationship between shared vision and corporate environmentalism is moderated by perceived uncertainty of environmental market.

H4b: The relationship between shared vision and corporate environmentalism is moderated by perceived uncertainty of environmental regulation.

3.5.2.3. Environmental Technological Capability

Capabilities are defined as “complex bundles of skills and accumulated knowledge, exercised through organizational processes, that enable firms to coordinate activities and make use of their assets” (Day, 1994: page 38). Shrivastava (1995) defined “environmental technology” as “production equipment, methods and procedures, product designs, and product delivery mechanisms that [1] conserve energy and natural resources, [2] minimize environmental load of human activities, and [3] protect the natural environment” (Shrivastava, 1995: page 185). Environmental technology provides firms with a competitive advantage and can be divided into two groups (Shrivastava, 1995). The first group is technology-oriented (i.e. apparatus, technological devices, and operational methods) and the second group is managerial skill-oriented (i.e. management skill, design capability, administrative systems) (Shrivastava, 1995). Both groups are used to abate pollution, manage wastes and toxins, conserve energy and water, effectively use material, and/or improve efficiency in the production process (Shrivastava, 1995).

Following Day (1994) and Shrivastava (1995), this research defines environmental technological capability as the complex bundles of skills and accumulated knowledge, exercised through organizational processes, enabling firms to (1) conserve energy and natural resources, (2) minimize the environmental load of human activities, (3) protect the natural environment, and (4) make use of their assets.

Shrivastava (1995) argued further that environmental technology could stimulate and/or create demand. For instance, the gasohol compatible car market is open to those manufacturers who possess the technology. The car stimulates the eco-car market. Certainly, a plant with clean technology is more welcomed by the local community than a plant with less-clean technology. In sum, environmental technological capability enables firms to implement corporate environmentalism. Likewise, the relationship between environmental technological capability and corporate environmentalism is moderated by perceived uncertainty of environmental market and environmental regulation. Thus, it is hypothesized that:

H5: Environmental technological capability has a positive influence on corporate environmentalism.

H5a: The relationship between environmental technological capability and corporate environmentalism is moderated by perceived uncertainty of environmental market.

H5b: The relationship between environmental technological capability and corporate environmentalism is moderated by perceived uncertainty of environmental regulation.

3.5.3. Consequences of Corporate Environmentalism

3.5.3.1. Marketing Performance

Vorhies and Morgan (2003) identified two dimensions of marketing performance: marketing effectiveness and marketing efficiency. Marketing effectiveness refers to the extent to which marketing objectives (i.e., increase in market share, sales, and market position) are obtained, whereas marketing efficiency means the ratio of resources used to produce the desired outcomes (Vorhies and Morgan, 2003). Literature on corporate environmentalism has studied a wide range of marketing performance: whether or not corporate environmentalism enhanced, for example, sales growth, profit growth, market share growth, ability to charge a higher price, corporate image, brand image, etc. The literature focused on the market effectiveness dimension of marketing performance. Thus, following the literature on corporate environmentalism and Vorhies and Morgan's (2003) two dimensions of marketing performance, this research investigates marketing effectiveness. Consequently, it is hypothesized that:

H6: Corporate environmentalism improves marketing performance.

3.5.3.2. Social Performance

Clarkson (1995) defined corporate social performance as firms' managing relationships they had with stakeholders. Likewise, Rangnathan (1998) refers to the social performance of firms as "the relationship of business with its different stakeholder groups' (Rangnathan, 1998: page 4). As the definition of stakeholder is critically referred to as too general, the question as to which groups of stakeholders firms should take into consideration is vital. Given the results of Hillman and Keim's (2001) study, social performance, in this research, refers to the improvement of the relationship of firms with direct stakeholders (i.e., customers, employees, and the community).

Corporate sustainability and corporate social performance are two different constructs that are closely related. They differ specifically in time scale. Dow Jones Sustainability Indexes, operated by SAM Research Inc. of SAM group, defines Corporate Sustainability as "a business approach that creates long-term shareholder value by embracing opportunities and managing risks from economic, environmental and social developments (Dow Jones Sustainability Indexes, 2009: online). It emphasizes a long-term time scale and involves three dimensions: economic, social, and environmental. Defining corporate social performance, Carroll (1979) stated that "the social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time" (Carroll, 1979: page 500). The definition focuses on a given point in time. This current research focuses on social performance of firms at a point in time; however, it is impossible to assume that corporate environmentalism could enhance all dimensions of social performance. Thus, dimensions of corporate social performance are discussed.

Meijer and Schuyt (2005) recapitulated that corporate social performance has four broad dimensions, including firms' responsibilities toward (1) the natural environment, (2) employees, (3) workplace diversity, and (4) customer, product and other issues. After reviewing other academic studies as well as independent

organizations which regularly and systematically rate firms' social performance, such as Dow Jones Sustainability Indexes and Kinder, Lydenberg, Domini & Company (KLD), it is revealed that community relations and social issues (i.e., alcohol, gambling, tobacco, the military, nuclear power) were identified. Consequently, it can be stated that, in general, social performance of firms comprises issues related to (1) natural environment, (2) employees, (3) customers and products, (4) community, and (5) other social issues.

Hillman and Keim (2001) stated that, "if the activity is directly tied to primary stakeholders, then investments may benefit not only stakeholders but also result in increased shareholder wealth. Participating in social issues beyond the direct stakeholders, however, may adversely affect a firms' ability to create shareholder wealth" (Hillman and Keim, 2001: page 135). Customers, employees, and the community are relevant stakeholders as supported by studies based on the stakeholder perspective. Therefore, social performance, in this research, refers to the improvement of the relationship of firms with direct stakeholders.

Qualitative studies on corporate environmentalism reviewed earlier also suggested that corporate environmentalism possibly improved social performance (i.e. Lamming et al., 1999; Dunphy, 2003; Schaefer, 2004). This research seeks to test whether corporate environmentalism improves firms' relationships with direct stakeholders. It is hypothesized that:

H7: Corporate environmentalism improves social performance.

3.5.3.3. Environmental Performance

Rugman and Verbeke (1998: page 365) stated that "environmental performance includes a set of variables such as emission levels, degree of resource consumption, and ecological impact measures." Adopting Rugman and Verbeke's (1998) definition of environment performance, environmental performance in this research is defined as the abatement of the negative impact from firms' operations and

activities on the natural environment. It encompasses pollution protection, reduction of resource consumption, and reduction of greenhouse gas emissions.

H8: Corporate environmentalism improves environmental performance.

3.6. Summary of the Hypotheses

Table 3.1 below presents a summary the tested hypotheses of all three proposed models. Hypotheses 1 and 2 are tested in the direct effect model and the simultaneous effect model. Hypotheses 3 – 8, are tested in every model. Hypotheses 3a – 5a and 3b – 5b are examined in the moderating effect model and the simultaneous effect model.

Table 3.1: Summary of Hypotheses

The Hypothesized Relationships		**The Main Effect Model**	**The Moderating Effect Model**		**The Simultaneous Effect Model**
Independent Variables (Causes)	Dependent Variables (Effects)		Perceived Market Uncertainty	Perceived Regulation Uncertainty	
Antecedents of Corporate Environmentalism: External Factors					
Perceived Market Uncertainty	Corporate Environmentalism	H1			H1
Perceived Regulation Uncertainty	Corporate Environmentalism	H2			H2
Antecedents of Corporate Environmentalism: Internal Resources and Capabilities					
Relationship with External Organizations	Corporate Environmentalism	H3	H3, H3a	H3, H3b	H3, H3a, H3b
Shared Vision	Corporate Environmentalism	H4	H4, H4a	H4, H4b	H4, H4a, H4b
Environmental Technological Capabilities	Corporate Environmentalism	H5	H5, H5a	H5, H5b	H5, H5a, H5b
Consequences of Corporate Environmentalism					
Corporate Environmentalism	Marketing Performance	H6	H6	H6	H6
Corporate Environmentalism	Social Performance	H7	H7	H7	H7
Corporate Environmentalism	Environmental Performance	H8	H8	H8	H8

Chapter IV

Research Methodology

This research uses causal relationship research to investigate the effects of perceived uncertainty of environmental market and environmental regulation on corporate environmentalism, which, in turn, influences firms' marketing, social, and environmental performance outcomes. This chapter deals with research methodology used to test the proposed models and hypotheses.

4.1. Research Methodology

The following two subsections explain the selected targeted population and sample and data collection procedure.

4.1.1. Targeted population

The present research collected data from Thailand's manufacturing firms in four industries, namely food, automotive and parts, electrical and electronics, and garment and textile. Table 4.1 illustrates figures about the four industries. The total 2008 export volume of the industries was US$100,679 million. In the same year, a total of 5,453 million people worked in manufacturing sector (Bank of Thailand, 2010: online). Approximately 2,870 million persons were employed in the selected four industries and 14,024 firms were estimated as being operated in the industries in the year (Table 4.1).

In addition to their significance to economic and social development, the four manufacturing industries also play an important role in the country's natural environmental condition. The following briefly reviews the negative impact of the industries on the natural environment.

Table 4.1: Statistics on the Targeted Manufacturing Industries

	Export Volume in 2008 (US$ Million)	No. of Establishments	No. of Persons Employed
Food and Agricultural Products	24,314 *[1,2]	8,250 *[1]	1,400,000 *[1]
Automotive and Parts	22,151*[2, 3]	1,677*[4]	120,000*[4]
Electrical and Electronics	47,015*[5]	1,569*[4]	526,367*[4]
Garment and Textile	7,199*[6]	2,528*[4]	824,500*[4]
Total	100,679	14,024	2,870,867

*[1] National Food Institute (http://fic.nfi.or.th/upload/state/media/2207.pdf)
*[2] Exchange rate 1 US$ = 32 Baht
*[3] Thailand Automotive Institute (http://www.thaiauto.or.th/research/document/status08/status0812.pdf)
*[4] Department of Export Promotion, Ministry of Commerce (www.depthai.go.th)
*[5] Electrical and Electronics Institute (www.thaieei.com/eei2009/bcknd/upload/indus/32/Q4-51.pdf)
*[6] Thailand Textile Institute (www.thaitextile.org/nstatistic/รายงานสถานการณ์%20มีนาคม%2052.pdf)

4.1.1.1. Food

The food industry creates negative impacts on the natural environment. For example, Watchaneeporn Setthasakko (2007) maintained that frozen seafood, shrimp farming, and fishery businesses had adverse consequences on the biological environment. A large amount of freshwater is used in the process of preparing frozen seafood Unwanted remnants of the seafood pollute the fresh water and the contaminated freshwater causes diseases (Watchaneeporn Setthasakko, 2007). Shrimp farming, also, causes natural environment problems. Shrimp farms pollute soil and water with salt, damage coastal forest areas, produce highly oxygen consuming water, and leave antibiotics in the environment (Watchaneeporn Setthasakko, 2007). In addition, the author stated that the unused shrimp farms were not fertile for trees and/or vegetables. The fishery business exhausts natural marine resources. Fishing apparatus is harmful to the reproduction areas of marine life (Watchaneeporn Setthasakko, 2007).

Previous literature has demonstrated the investment of the food processing industry in clean technology. Sompong Hanvajanawong (2001) found that almost half of the studied sample (46 out of 104 plants or 44%) did not invest in any clean technology at all. 36 plants (or 35%) invested less than one million Baht. Only 22 plants (or 20%) invested more than one million Baht on clean technology. The

definition of clean technology adopted in the literature was defined as a “measure to improve or adjust production process or products, so that consumption of raw materials, energy and natural resources is accomplished efficiently, with minimum waste or none at all” (Sompong Hanvajanawong, 2001: page 33). Sompong Hanvajanawong (2001) reported further that those plants investing nothing in clean technology exported their products mainly to Japan (13 plants), Europe and the US (9 plants), and other Asian markets (8 plants). 11 plants exclusively focused on the domestic market. Data collection for the study was conducted during 2000-2001.

4.1.1.2. Automotive and Parts

The world’s major automotive manufacturers have plants in Thailand (i.e., Toyota, Honda, General Motors, etc.). The Thailand Automotive Institute reported that the industry produced 999,378 passenger cars, trucks or pick-ups, and 1,635,249 motorcycles in 2009 (Thailand Automotive Institute, 2010: online). The media has reported automotive manufacturers’ initiatives and implementations relating to corporate environmentalism. The following illustrates corporate environmentalism in the industry.

At the product level, Toyota Thailand recently introduced hybrid cars to Thai market. At the process level, the media reported that Toyota’s 3rd assembly plant was well equipped with environmentally-friendly technology. The plant was named “an ecological factory” and was expected to reduce 8,500 tons of carbon dioxide emissions (Bangkokbiznews, 2007: online).

As for Honda, Bangkokbiznews (2006: online) reported that, relative to the emissions level in the year 2000, carbon dioxide emissions from manufacturing of each Honda car in 2005 were reduced by approximately 5%. Another 5% reduction or more was set for the year 2006 - 2010. The manufacturer aimed at a 20% reduction of carbon dioxide emissions for each manufacturing plant (Bangkokbiznews, 2006: online).

General Motors, the US manufacturer, built a manufacturing plant in Spain. The plant was planned to use energy supplied partially by a solar cell system, worth US 78 million dollars (Bangkokbiznews, 2009a: online). The system was expected to start its operation in September 2009 (Bangkokbiznews, 2009a: online). In addition to the energy from solar cells, the media reported that General Motors' plants in the US also used energy from landfill gas (Bangkokbiznews, 2009a: online).

The president of Mercedes-Benz Thailand explained that all Mercedes-Benz vehicles were manufactured with the company's environmentally-friendly innovations (Bangkokbiznews, 2009b: online). The innovations vary, depending on the version and model of the cars; however, the innovations, which are under the umbrella name, "BlueEFFICIENCY," aim at the same target, zero carbon dioxide emissions (Bangkokbiznews, 2009b: online).

The above examples signify corporate environmentalism in the automotive and parts industry. The industry is apparently active in response to the natural environmental concerns.

4.1.1.3. Electrical and Electronics

The electrical and electronics industry produces a wide range of products along its value chain. The electrical and electronics industry can be classified into three classes: upstream, midstream, and downstream (Department of Industrial Promotion: online). The upstream industry produces semiconductors, blank silicon wafers, wafer fabrication, resistors, transistors, etc. The midstream industry makes integrated circuits, printed circuits, power supply, monitors, keyboards, etc. Finally, the downstream industry manufactures computers and parts, telecommunications equipment, electrical appliances, automotive electronics, etc. The higher the quality of life is, the more these electrical and electronics products are produced, acquired, used, and disposed of. The pollution control department of Thailand estimated that in 2003 nearly 58,000 tons of refrigerators, washing machines, air-conditioning units, and computers and about 645 million mobile phones, batteries, and fluorescent lamps

were disposed of (Pollution Control Department, 2007). Such items contained toxic metals and substances such as cadmium, lead, zinc, mercury, etc. However, the department pointed out that more than 80% of such waste had economic value and possibility to be recycled (Pollution Control Department, 2007). Yet, the department commented that the country did not have an efficient system to manage such waste. Apparently, the waste is disposed of without adequate consideration of the consequences of toxic substances.

4.1.1.4. Garment and Textile

The Thailand Textile Institute advised that production processes in the textile value chain create negative impacts on the natural environment. For example, in the fiber producing stage, pesticide leftovers possibly remain on fibers and pollute soil. In the spinning process to produce yarn, dust is emitted into the air. Weaving produces noise pollution. Dyeing, printing, and finishing fabric use chemicals and water. Some chemicals used in coloring fabric are carcinogenic substances that possibly cause cancer in humans. Consequently, the European Parliament Directive 2002/61/EC of July 2002 bans azo colorants, for this reason.

The Thailand Textile Institute has urged that the textile industry needed to improve its environmental performance. The Institute recommended that all related parties in the industry needed to cooperate and participate in developing clean technology (Thailand Textile Institute: online). In addition, the parties are encouraged to invest in research and development. Such high environmental impact industries as dyeing should be clustered in industrial zones to facilitate environmental management. This exemplifies means to alleviate the negative impacts of the industry on the natural environment.

By and large, the four targeted industries play a major role in not only the country's economic and social development but also in the natural environmental condition of the country and the world. Alternatively, firms in the industries are, in

part, responsible for the deterioration of natural environment. Therefore, this research collected data from the four industries to test the proposed models.

4.1.2. Sample and Data Collection

This research employs Structural Equation Modeling (SEM) to analyze data; SEM, compared to other statistical tools, requires a large sample size. This subsection, then, discusses first the required sample size, followed by the sampling frame, data collection, and representation check.

4.1.2.1. Sample Size

Structural Equation Modeling (SEM), which uses the maximum likelihood estimation method (MLE) to estimate parameters, requires a large sample size in order to produce trustworthy results (Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., and Tatham, R.L., 2006). One of the criteria determining sample size is the number of estimated parameters in the investigated model. Nonglak Wiratchai (1999) suggested that a suitable ratio of sample size to the number of estimated parameters was 20 to 1. Hair et al. (2006) contended that a 10 to 1 ratio was acceptable; however, a ratio of 5 to 1 was the least acceptable minimum. The number of estimated parameters is identified as shown in Table 4.2.

Table 4.2 indicates that the estimated parameters of the direct effect model and the simultaneous effect model equal 101, whereas those of the moderating effect model equal 77. The simultaneous effect model consists of two sample groups: the high versus low perceived uncertainty groups. The number of combined estimated parameters, thus, is 202. Using the 5:1 ratio, the resulting minimum sample size is 1010 observations. Thus, the research aimed at a sample size of approximately 1010 observations.

Table 4.2: A List of Estimated Parameters

Estimated Parameter Matrix	The Direct Effect Model	The Moderating Effect Model	The Simultaneous Effect Model
Factor loading for exogenous variables (LX)	24	14	24
Factor loading for endogenous variables (LY)	18	18	18
Path coefficients from exogenous variables to endogenous variables (GA)	5	3	5
Path coefficients from endogenous variables to endogenous variables (BE)	3	3	3
Measurement error in X (TD)	24	14	24
Measurement error in Y (TE)	18	18	18
Variance of endogenous variables (PS)	4	4	4
Variance of exogenous variables (PH)	5	3	5
Total	101	77	101
Number of Groups	1	2	2
Total of estimated parameters	101	154	202
Minimum Required Sample Size (5 : 1)	**505**	**770**	**1010**

4.1.2.2. Sampling Frame

Approximately 12,000 company profiles were collected from official websites, published directories, and/or electronic databases available to the public from the following 19 trade associations, institutes, and private/government bodies related to the target industries.

1 The Department of Export Promotion (www.depthai.go.th)
2 The Stock Exchange of Thailand (www.set.or.th)
3 The Federation of Thai Industries (www.fti.or.th)
4 Thai Food Processors' Association (www.thaifood.org)
5 The Rice Packers Association (www.ricepackers.or.th)
6 Thai Fruit & Vegetable Producer Association
7 Thai Broiler Processing Exporters Association
8 Thai Agro Business Association
9 North Eastern Tapioca Trade Association
10 Thai Frozen Foods Association (www.thai-frozen.or.th)

11 Thai Organic Trade Association
12 Electrical and Electronics Institute (www.thaieei.com)
13 Thai Automotive Institute (www.thaiauto.or.th)
14 Thai Autoparts Manufacturers Association (www.thaiautoparts.or.th)
15 The Thai Automotive Industry Association
16 Thai Tool and Die Industry Association (wwwo.tdia.or.th)
17 Thailand Textile Institute (www.thaitextile.org)
18 The Association of Thai Bleaching Dyeing Printing and Finishing Industries
19 The Thai Chamber of Commerce and the Board of Trade of Thailand

After collecting the initial list, 12,000 companies were contacted by telephone to verify the name of the managing director or of top management, and the mailing address. This step resulted in 4,590 usable company names in the four industries shown in Table 4.3.

Table 4.3: Sample Companies in Four Industries

Industry	No. of Companies
Food	1,171
Automotive and Parts	1,317
Electrical and Electronics	1,332
Garment and Textile	770
Total	4,590

4.1.2.3. Data Collection

The data was collected by mail. A mail survey allows respondents to answer questions using their own discretion; hence, it provides a more accurate result (Aaker, Kumar, and Day, 2007).

The required sample size calculated in the previous subsection is 1010 and the available sampling frame is 4,590 firms. Thus, the required response rate was about 22% (1010/4590). To ensure that the sample size reached the minimum requirement, the mailing package sent to respondent firms included the following items:

1. An introduction (Appendix A)
2. An introduction letter from the Thai Chamber of Commerce and the Board of Trade of Thailand (Appendix B)
3. A souvenir
4. A prepaid-postage envelope for returning the completed questionnaire
5. A four-page questionnaire (Appendix C)

A total of 4,590 packages were sent out to respondents in October, 2009. 1,232 packages were returned during 13 October 2009 to 24 November 2009, a 26.8% response rate. After checking whether or not the respondents were working in a manufacturing firms in the target industries and for the completeness of questionnaires, 772 questionnaires are usable, a 16.8% effective response rate.

4.1.2.4. Representation Check

Table 4.4 combines and compares figures about the four targeted industries presented in Table 4.1 and figures about this research's sample. The comparison provides an outlook on the sample's representation of the population. Distribution of the numbers of firms and employees in the population of the four industries is greatly different from the distribution of the corresponding numbers in the sample. The numbers of firms in the sample are relatively evenly distributed, whereas the numbers of firms in the population are greatly different.

According to the National Food Institute and the Department Export Promotion, a total of 8,250 firms (or 59%) and 1.4 million employees (or 49%) were in the food industry, the largest numbers in the population. However, in the sample, firms in the food industry are about one quarter (179 firms or 23%). The second largest group in the population was firms in the garment and textile industry (2,528 firms or 18%). The industry employed 824,500 persons (or 29%). In the sample, the number of firms in the garment and textile industry is only 94 firms (or 12%), the smallest group of firms in the sample. The numbers of firms in the automotive and parts and electrical and electronics industries in the population were nearly the same

(1,677 firms or 12% and 1,569 firms or 11% respectively). However, the automotive and parts industry hired fewer number of employees (120,000 persons or 4%) than the electrical and electronics industry did (526,367 persons or 18%). In the sample, firms in the automotive and parts industry are the largest group (272 firms or 35%), whereas firms in the electrical and electronics industry are the second largest (189 firms or 24%).

Table 4.4: Figures about Population and Sample across Four Industries

Industry	**Population**						**Sample**	
	2008 Export Volume (US$ Million)		No.of Manufacturers		No.of Persons Employed		No.of Firms	
Food	24,314*[1,2]	24%	8,250*[1]	59%	1,400,000*[1]	49%	179	23%
Automotive and Parts	22,151*[2, 3]	22%	1,677*[4]	12%	120,000*[4]	4%	272	35%
Electrical and Electronics	47,015*[5]	47%	1,569*[4]	11%	526,367*[4]	18%	189	24%
Garment and Textile	7,199*[6]	7%	2,528*[4]	18%	824,500*[4]	29%	94	12%
Total	100,679	100%	14,024	100%	2,870,867	100%	734	95%
Others (identified as a members of two industries or unspecified)							38	5%
Total							772	100%

*[1] National Food Institute (http://fic.nfi.or.th/th/thaifood/default.asp)
*[2] Exchange rate 1 US$ = 32 Baht
*[3] Thailand Automotive Institute (http://www.thaiauto.or.th/research/document/status08/status0812.pdf)
*[4] Department of Export Promotion, Ministry of Commerce (www.depthai.go.th)
*[5] Electrical and Electronics Institute (www.thaieei.com/eei2009/bcknd/upload/indus/32/Q4-51.pdf)
*[6] Thailand Textile Institute (www.thaitextile.org/nstatistic/รายงานสถานการณ์%20มีนาคม%2052.pdf)

The electrical and electronics industry accounted for almost half of the combined 2008 export volume of the four industries (US$ 47,015 million or 47%). The garment and textile industry generated the least amount of 2008 export volume among the four industries (US$7,199 million or 7%). The 2008 export volumes of the food and automotive and parts industries were just about the same (US$24,314 million or 24% and US$22,151 million or 22% respectively).

In sum, the representation check reveals that although the sample does not perfectly match the population's profile, it contains firms in all four industries and the number of firms in sample across the four industries is relatively evenly distributed. This is beneficial for data analysis in that none of the four industries overly dominates the sample. Results are drawn from firms in all four industries.

4.2. Measurement and Questionnaire Development

Following Churchill's (1979) and Bagozzi's (1994) guidelines, scales and questionnaire of this research were developed in four steps:

1. Constructs to be measured were first listed.
2. A draft of questionnaire was prepared. This was done by adapting or adopting, and translating scale measures initiated and used in previous research to suit the objectives of this research. Table 4.5 lists the measures from previous literature.
3. Two marketing academics reviewed the first version of the questionnaire. In addition, executives in industries listed in Appendix D were interviewed. Results from the interviews helped ensure the relevancy and significance of tested concepts and constructs. The second version of the questionnaire was tested with a sample of target respondents to pinpoint any further possible problems.
4. The second version was pretested and completed by 54 firms. The scales' reliability and validity were assessed. Several items were modified accordingly.

4.3. Conclusion

This chapter explains the research methodology used to test the proposed models and hypotheses. A total of 772 usable questionnaires were obtained for data analysis. They were collected from manufacturing firms in four industries: food, automotive and parts, electrical and electronics, and garment and textile. The data collection method was a mail survey. The survey's effective response rate is 16.8%. Procedures used in developing measures and the questionnaire are also demonstrated.

Table 4.5: List of Measures Used in Previous Literature

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	**Scale**
Corporate Environmentalism	**Banerjee's (2002) and Banerjee et al.'s (2003) corporate environmentalism:** *A. Internal Environmental Orientation* 1. Environmental issues are not very relevant to the major function of our firm. (R,D) 2. At our firm, we make a concerted effort to make every employee understand the importance of environmental preservation. 3. We try to promote environmental preservation as major goal across all departments. (D) 4. Our firm has a clear policy statement urging environmental awareness in every area of operations. 5. Environmental preservation is a high priority activity in our firm. 6. Preserving the environment is a central corporate value in our firm. *B. External Environment Orientation* 1. The natural environment does not currently affect our firm's business activity. (R,D) 2. The financial well being of our firm does not depend on the state of the natural environment. (R) 3. In our firm, environmental preservation is largely an issue of maintaining a good public image. (D) 4. Our firm's responsibility to its customers, stockholders, and employees is more important than our responsibility toward environmental preservation. (R) 5. Environmental preservation is vital to our firm's survival. 6. Our firm has a responsibility to preserve the environment. 7. Our firm strives for an image of environmental responsibility. (D)	Following Banerjee's (2002) and Banerjee et al.'s (2003) definition of corporate environmentalism	Items 2.4, 2.5, and 2.6 in the questionnaire (17 items) (adopted from Banerjee , 2002 and Banerjee et al., 2003)

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	Scale
	C. Environmental Corporate Strategy 1. Our firm has integrated environmental issues into our strategic planning process. 2. In our firm, quality includes reducing the environmental impact of products and processes. 3. At our firm we make every effort to link environmental objectives with our other corporate goals. 4. Our firm is engaged in developing products and processes that minimize environmental impact. (D) 5. Environmental protection is the driving force behind our firm's strategies. (D) 6. Environmental issues are always considered when we develop new products. 7. Our firm develops products and processes that minimize environmental impact. (D) *D. Environmental Marketing Strategy* 1. We emphasize the environmental aspects of our products and services in our ads. 2. Our marketing strategies for our products and services have been considerably influenced by environmental concerns. 3. In our firm, product-market decisions are always influenced by environmental concerns. 4. We highlight our commitment to environmental preservation in our corporate ads. (D) Note: (R) and (D) denote the reversed and deleted items from the study respectively		

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	Scale
Perceived Uncertainty of Environmental Market	**Lewis and Harvey's (2001) environmental products, markets, and demand:** 1. Customer environmental preferences 2. Environmental product demand 3. Availability of substitute environmental products 4. Availability of complementary environmental products **Jaworski and Kohli's (1993) market turbulence:** 1. In our kind of business, customers' product preferences change quite a bit over time. 2. Our customers tend to look for new products all the time. 3. Sometimes our customers are very price-sensitive, but on other occasions, price is relatively unimportant. (D) 4. We are witnessing demand for our products and services from customers who never bought them before. 5. New customers tend to have product-related needs that are different from those of our existing customers. 6. We cater to many of the same customers that we used to in the past. **Luca & Atuahene-Gima's (2007) market uncertainty:** 1. Customer needs and product preferences changed quite rapidly. 2. Customer product demands and preferences were highly uncertain. 3. It was difficult to predict changes in customer needs and preferences. 4. Market competitive conditions were highly unpredictable.	Incapability of firms to comprehend and conjecture the nature of current/future consumers' preference for environmental products, environmental product demand, the availability of substitute and complementary environmental products in firms' product-market (adapted from Milliken, 1987 and Lewis and Harvey, 2001).	Item 1.1 in the questionnaire (5 items) (adapted from Lewis and Harvey, 2001 and Luca & Atuahene-Gima, 2007)

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	Scale
	Olson, Slater, and Hult's (2005) market turbulence 1. In our business, customers' product preferences change quite a bit over time. 2. Our customers tend to look for new products or services to satisfy their needs		
Perceived Uncertainty of Environmental Regulation	**Lewis and Harvey's (2001) government environmental policy:** 1. Environment tax policies. 2. National environmental laws affecting international business. 3. Environmental regulations affecting the business sector. 4. Enforcement of existing environmental laws.	Incapability of firms to comprehend and conjecture the nature of current/future environmental regulation and enforcement imposed in firms' product-market, resulting from firms' perceptions of environmental regulation and enforcement as complicated, ambiguous, often changing, or changing in an unpredictable way (adapted from Milliken, 1987; Lewis and Harvey, 2001; Feiock and Stream, 2001).	Item 1.3 in the questionnaire (5 items) (adapted from Lewis and Harvey, 2001)
Relationship with External Organizations	**Atuahene-Gima and Murray's (2004) intraindustry relationships:** 1. Project managers communicated frequently with knowledgeable executives within our industry. 2. Project managers had close interaction with knowledgeable people about conditions in our industry. 3. Project managers received a lot of information from other executives within our industry. 4. Project managers received advice about the project from knowledgeable people within our industry.	Capability of firms in creating, maintaining, and making use of relationships with external organizations in order to acquire meaningful information related to natural environment and other related issues (adapted from Geletkanycz and Hambrick, 1997 and Ritter and Gemünden, 2003).	Item 2.1 in the questionnaire (4 items) (adapted from Atuahene-Gima and Murray, 2004)

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	Scale
	Atuahene-Gima and Murray's (2004) extraindustry relationships: 1. Project members put a lot of effort into communicating with knowledgeable people outside our industry. 2. Project members maintained close contacts with knowledgeable people in firms outside our industry. 3. Project members learned a lot from knowledgeable people in firms not operating in our industry 4. Project members received useful information from knowledgeable people outside our industry.		
Shared Vision	**Aragón-Correa et al.'s (2008) shared vision:** 1. The objectives of this organization are very well-known to everybody working here. 2. Everybody working in this garage influences the way to work and the objectives of the firm. 3. Everybody in this organization freely contributes his/her point of view about how to run it smoothly.	Members at all levels within firms sharing the same values and objectives about the environmental strategic management and practice (adapted from Aragón-Correa et al., 2008 and Hart, 1995).	Item 2.2 in the questionnaire (3 items) (adopted from Aragón-Correa et al., 2008)
Environmental Technological Capability	**Wang, Lo, Zhang, and Xue's (2006) technological capability:** 1. We always make relatively heavy investment in R&D activities. 2. We have accumulated stronger and various technological skills. 3. On-the-job training is provided frequently in our firm to improve the technical skills of employees. 4. We are qualified to attract and motivate talented experts.	The complex bundles of skills and accumulated knowledge, exercised through organizational processes, enabling firms to (1) conserve energy and natural resources, (2) minimize environmental load of human activities, (3) protect the natural environment, and	Item 2.3 in the questionnaire (7 items) (adopted from Wang, Lo, Zhang, and Xue, 2006)

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	Scale
	5. We have the ability to accurately predict future technological trends. 6. We are skillful in applying new technology to problem-solving. 7. We are one of the leaders in our primary industry to establish and upgrade technology standards. 8. We always lead technology innovation of the principal industry in which we operate. 9. Compared with our major competitors, we have a competitive and powerful technology strategy. (D) 10. We have strong capability to integrate external technological resources with in-house resources of our firms.	(4) make use of their assets (following Day, 1994 and Shrivastava, 1995).	
Marketing Performance	**Atuahene-Gima and Murray's (2004) performance:** To what extent have the objectives for marketing the product been achieved with respect to 1. Sales 2. Market share 3. Profit **Aragón-Correa et al.'s (2008) performance:** Please rate your firm's overall performance on each of the following objectives relative to others in the industry. 1. Return on investment	The extent to which marketing objectives (i.e., increase in market share, sales, and market position) are obtained (following Vorhies and Morgan, 2003).	Item 3.1 Section 1 in the questionnaire (3 items) (adopted from Atuahene-Gima and Murray, 2004)

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Constructs	Dimensions and/or items in previous research	Definitions and scales used in current research	
		Definitions	**Item No.**
	2. Earnings growth Please [also], could you provide the approximate return on investment for your firm for the last year.		
Social Performance	**Ranganathan's (1998) corporate social performance:** 1. Employment practices 2. Community relations 3. Ethical sourcing 4. Social impact of product **Meijer and Schuyt's (2005) corporate social performance:** 1. The natural environment 2. The treatment of employees 3. Workplace diversity 4. Customer, product, and other issues **Dow Jones Sustainability Indexes:** 1. Labor practice indicators: diversity, equal remuneration, freedom of association, layoffs, health and safety. 2. Human capital development: 3. Talent attraction and retention 4. Corporate citizenship/philanthropy 5. Social reporting	The improvement of firms' relationship with direct stakeholders. (adapted from Clarkson, 1995; Hillmand and Keim, 2001; Ranganathan, 1998; Meijer and Schuyt, 2005; Dow Jones Sustainability Indexes)	Item 3.1 Section 2 and 3 in the questionnaire (5 items) (adapted from Ranganathan, 1998; Dow Jones Sustainability Indexes, and KLD)

Table: 4.5: List of Measures Used in Previous Literature (Continued)

Construct	Dimension and/or scale used in previous research	Definition and scale used in current research	
		Definition	**Scale**
Environmental Performance	**Ranganathan's (1998) corporate environmental performance:** 1. Material use 2. Energy consumption 3. Non-product output 4. Pollution releases **Dow Jones Sustainability Indexes:** 1. Environmental reporting 2. Total direct greenhouse gas emissions 3. Total energy consumption 4. Total water use 5. Total waste generated **Rugman and Verbeke's (1998) environmental performance**: 1. Emission levels 2. Degree of resource consumption 3. Ecological impact	The abatement of the negative impact from firms' operations and activities on the natural environment (adapted from Rugman and Verbeke, 1998; Ranganathan, 1998; and Dow Jones Sustainability Indexes).	Item 3.1 Section 4 in the questionnaire (6 items) (adapted from Rugman and Verbeke,1998; Ranganathan, 1998; Dow Jones Sustainability Indexes, and KLD)
Firm size	**Baker and Sinkula's (2005) relative size:** 1. The size of your unit's sales revenues in your principal served market segment in relation to those of your largest competitor. **Luca and Atuahene-Gima's (2007) firm size:** Number of employees		Item 4.5 and 4.6 in the questionnaire (2 items) (adapted from Baker and Sinkula, 2005 and Luca & Atuahene-Gima**,** 2007).

Chapter V

Data Analysis and Hypothesis Testing

This research proposes three models, according to type of the effects of perceived market uncertainty and perceived regulation uncertainty: the direct effect model, the moderating effect model, and the simultaneous effect model. This chapter tests the three proposed models and hypotheses. It starts with an explanation of the data analysis plan and sample arrangement corresponding to the plan. Then, the data preparation procedure is discussed, followed by respondents' profiles and descriptive statistics. The measurement model, construct validity, and measurement invariance test are then examined. This is to ascertain that measurement scales are valid and reliable. After assessment of the measurement model, construct validity, and the measurement invariance model, the three proposed models and hypotheses are tested. Supplementary findings, additionally, are discussed. Results of hypothesis testing and estimated models are summarized. This chapter ends with a conclusion section.

5.1. Data Analysis Plan and Samples

This section explains the data analysis plan and sample arrangement for the test of the three proposed models: the direct effect model, the moderating effect model, and the simultaneous effect model.

The direct effect model hypothesizes and tests the direct effect of perceived market uncertainty and perceived regulation uncertainty on corporate environmentalism. Together with the direct effect of the two external uncertainties of firms influencing corporate environmentalism, three internal antecedents and three consequences are examined. The three internal antecedents of corporate environmentalism are relationship with external organizations, shared vision, and environmental technological capabilities. The three consequences of corporate

environmentalism are marketing performance, social performance, and environmental performance. The total 772 observations are used to test the direct effect model.

The moderating effect model investigates whether or not perceived market uncertainty and perceived regulation uncertainty moderates the relationships between three internal factors and corporate environmentalism. In other words, the model examines whether or not the relationships between internal factors and corporate environmentalism depend on the level of the two perceived uncertainties. To test the moderating effect model, the 772-observation sample is split by the median value of perceived market uncertainty (median = 3.00) and perceived regulation uncertainty (median = 3.6). The splitting results in two pairs of data:

1. The market uncertainty pair consists of the high market uncertainty group (356 firms) and the low market uncertainty group (333 firms). In total, both groups contain 689 observations. The difference of 83 observations (772 – 689 = 83) is made up of firms whose score for perceived market uncertainty falls exactly on the median value (3.00). Thus, they are excluded from the analysis of the moderating effect of perceived market uncertainty.

2. The regulation uncertainty pair comprises the high regulation uncertainty group (316 firms) and the low regulation uncertainty group (358 firms), making up a total of 674 firms. Another 98 firms (772 – 674 = 98), whose scores for perceived regulation uncertainty are equal to the median value (3.6), are kept out of the analysis.

The internal factors influencing corporate environmentalism and the consequences of corporate environmentalism are tested in the moderating effect model.

The simultaneous effect model tests the direct effect and the moderating effect of perceived market uncertainty and perceived regulation uncertainty at the same time. In addition to the moderating effect of the two perceived uncertainties being

tested as in the moderating effect model, the direct effect of the two is estimated in the simultaneous effect model. Hence, the market uncertainty pair and the regulation uncertainty pair used to test the moderating effect are used to investigate the simultaneous effect. Similarly, the internal factors and the consequences of corporate environmentalism are examined in this model.

Referring to the required sample size estimated in section 4.1.2.1 of Chapter V, the size of the actual sample used for data analysis and after the sample arrangement process is close to the estimated required sample size, except for the sample used to analyze the simultaneous effect model. It is somewhat smaller than the minimum required sample size. The following reconciles the estimated sample size and the actual sample size. Table 5.1 compares the estimated and actual sample size.

For the direct effect model, after deletion of several indicators of variables during the model refinement process, the required minimum sample size is 445. The total of 772 observations used for the model analysis is well above the minimum requirement. For the moderating effect model, the minimum required sample size for each paired group is 355 (710 ÷ 2, Table 5.1), whereas the actual sample size of the market uncertainty pair is 356 in the high market uncertainty group and 333 in the low market uncertainty group and the actual sample size of the regulation uncertainty pair is 316 in the high regulation uncertainty group and 358 in the low regulation uncertainty group. The actual sample size of each individual sample group used to analyze the moderating effect model is close to the minimum requirement. The number of estimated parameters in the simultaneous effect model (89) is greater than the number of estimated parameters in the moderating effect model (71). Thus, the simultaneous effect model requires a larger sample size, 445 observations (890 ÷ 2, Table 5.1). The sample used in the moderating effect model is also used to analyze the simultaneous effect model. Hence, the actual sample size used for the simultaneous effect model is smaller than the minimum level. However, Hair et al., (2006) argued that a sample size of 300 or more was acceptable to analyze a model with constructs measured by fewer than 3 indicators. In this research, only perceived market uncertainty construct is measured by 2 indicators while the other constructs are

measured by 3 or more indicators. Consequently, the total sample and paired groups of data derived from the arrangement are used to analyze the three proposed models.

Table 5.1: A Comparison of the Estimated versus Actual Sample Size

Parameter Matrix	The Direct Effect Model		The Moderating Effect Model		The Simultaneous Effect Model	
	Proposed	Modified*	Proposed	Modified*	Proposed	Modified*
Factor loading for exogenous variables (LX)	24	21	14	14	24	21
Factor loading for endogenous variables (LY)	18	15	18	15	18	15
Path coefficients from exogenous variables to endogenous variables (GA)	5	5	3	3	5	5
Path coefficients from endogenous variables to endogenous variables (BE)	3	3	3	3	3	3
Measurement error in X (TD)	24	21	14	14	24	21
Measurement error in Y (TE)	18	15	18	15	18	15
Variance of endogenous variables (PS)	4	4	4	4	4	4
Variance of exogenous variables (PH)	5	5	3	3	5	5
Total of estimated parameters	101	89	77	71	101	89
Number of Groups	1	1	2	2	2	2
Total of estimated parameters	101	89	154	142	202	178
Minimum Required Sample Size (5 : 1)	505	445	770	710	1010	890
Minimum Required Sample Size for Each Paired Group (5 : 1)			385	355	505	445
Actual Sample Size:						
The Direct Effect Model		772		--		--
The Moderating Effect Model		--		689		--
The Market Uncertainty Pair		--		(356/333)		--
The Regulation Uncertainty Pair				674		
				(316/358)		689
The Simultaneous Effect Model		--				(356/333)
The High Market Uncertainty Group		--		--		674
The Low Market Uncertainty Group				--		(316/358)

* Several observed variables are deleted from the analysis. The deletion is discussed later in this chapter.

5.2. Data Preparation

Before analyzing the data, two steps were taken. First, the data was examined for any missing values and missing value replacement was proceeded. Second, a normality test on data was carried out. It was done by assessing observed variables' skewness and kurtosis (Hair et al., 2006).

5.2.1. Missing Value Replacement

A total of 772 usable observations are included in the sample. It is the result of the initial examination of data. The examination criteria are that (1) firms are manufacturers in the specified four industries: food, automotive and parts, electrical and electronics, and garment and textile, (2) missing values for each observation or variable are not more than 10%, and (3) firms did not participate in the questionnaire pre-testing process. The missing values in 772 usable questionnaires were replaced by the variables' mean value.

5.2.2. Normality Test of Data

In this section, sample is tested for normal distribution. It is done by examining the skewness and kurtosis values of observed variables: whether the observed variables' standardized skewness value ($Z_{skewness}$) and standardized kurtosis value ($Z_{kurtosis}$) are larger than the critical value which is ±2.58 at the 99% significance level or ±1.96 at the 95% significance level (Hair et al., 2006). The standardized skewness value is calculated by using the formula, $Z_{skewness}$ = skewness/$\sqrt{6/n}$, where n = sample size, whereas the standardized kurtosis value is $Z_{kurtosis}$ = kurtosis/$\sqrt{24/n}$, where n = sample size (Hair et al., 2006). Nine constructs in this research were measured initially by 42 indicators but 6 indicators were cut off during the respecficiation process, resulting in 36 indicators. Out of 36 indicators, $Z_{skewness}$ of 23 indicators is within the range of ±1.96 critical value (the bold numbers in Table 5.2). The indicators are symmetrically distributed. The $Z_{skewness}$ of the other 13 indicators is larger than ±1.96, indicating that the distribution of indicators is skewed at the 95% significance level. A total of 8 of the 13 skewed indicators belong to social performance and environmental performance constructs. As for kurtosis, $Z_{kurtosis}$, 3 out of 36 indicators (the bold numbers) fall within the ±1.96 range, suggesting that the other 34 indicators are peaked, higher than normally distributed data. The assessment of observed variables' skewness and kurtosis indicates that the sample is not normally distributed.

Table 5.2: Skewness and Kurtosis Statistics of Indicators (n = 772)

No.	Indicators	Skewness	$Z_{Skewness}$	Kurtosis	$Z_{Kurtosis}$
1	MktUn1	-.05	**-.29**	-.83	-9.45
2	MktUn2	-.02	**-.10**	-.98	-11.17
3	RegUn1	-.14	**-.81**	-.36	-4.07
4	RegUn2	-.68	-3.88	.29	3.34
5	RegUn3	-.27	**-1.52**	-.27	-3.09
6	RegUn4	-.27	**-1.54**	-.23	-2.55
7	RegUn5	-.30	**-1.68**	-.47	-5.28
8	Reltn1	-.04	**-.24**	-.58	-6.57
9	Reltn2	.02	**.09**	-.59	-6.75
10	Reltn3	-.01	**-.08**	-.56	-6.34
11	Reltn4	-.18	**-1.00**	-.53	-5.97
12	ShVsn1	-.24	**-1.36**	-.51	-5.79
13	ShVsn2	-.09	**-.52**	-.55	-6.27
14	ShVsn3	-.18	**-1.00**	-.59	-6.73
15	TchCp1	.11	**.61**	-.71	-8.06
16	TchCp2	-.08	**-.45**	-.39	-4.38
17	TchCp3	-.36	-2.04	-.28	-3.12
18	TchCp4	.09	**.50**	-.49	-5.51
19	TchCp5	-.03	**-.15**	-.25	-2.86
20	TchCp6	-.02	**-.09**	-.15	**-1.69**
21	TchCp7	.03	**.14**	-.20	-2.27
22	MktPrf1	-.37	-2.11	-.81	-9.24
23	MktPrf2	-.37	-2.08	-.88	-9.96
24	MktPrf3	-.29	**-1.66**	-.69	-7.79
25	SocPrf3	-.87	-4.93	.47	5.33
26	SocPrf4	-.98	-5.53	1.23	13.97
27	SocPrf5	-.87	-4.94	.53	5.99
28	EnvPrf1	-1.11	-6.30	1.80	20.38
29	EnvPrf2	-.80	-4.52	1.21	13.76
30	EnvPrf3	-.84	-4.77	1.34	15.24
31	EnvPrf4	-.90	-5.08	1.68	19.07
32	EnvPrf5	-1.00	-5.65	1.86	21.08
33	InEnOr	-.274	**-1.55**	-.298	-3.38
34	ExEnOr	-.256	**-1.45**	-.100	**-1.13**
35	CrpStgy	-.437	-2.48	.043	**.49**
36	MktStgy	-.279	**-1.58**	-.250	-2.83

The skewness and kurtosis of indicators of corporate environmentalism's four first-order constructs are also examined. The four first-order constructs of corporate environmentalism are measured by 14 indicators. Table 5.3 reports $Z_{skewness}$ and $Z_{Kurtosis}$ estimates of the 14 indicators. Out of 14 indicators, $Z_{skewness}$ of 7 indicators is out of the range of ±1.96. As for kurtosis, $Z_{Kurtosis}$ of 12 indicators is out of the range

of ± 1.96. The statistics indicate that the 14 indicators of first-order constructs are not normally distributed: they tend to be peaked, higher than normally distributed data.

Table 5.3: Skewness and Kurtosis Statistics of Indicators of Corporate Environmentalism's First-Order Constructs

No.	Indicators	Skewness	$Z_{Skewness}$	Kurtosis	$Z_{Kurtosis}$
1	InEnOr1	-.39	-2.19	-.24	-2.72
2	InEnOr2	-.36	-2.02	-.43	-4.91
3	InEnOr3	-.21	**-1.17**	-.45	-5.11
4	InEnOr4	-.22	**-1.26**	-.43	-4.85
5	ExEnOr4	-.25	**-1.43**	-.42	-4.79
6	ExEnOr5	-.32	**-1.79**	-.21	-2.41
7	CrpStgy1	-.29	**-1.64**	-.10	**-1.18**
8	CrpStgy2	-.43	-2.44	-.23	-2.62
9	CrpStgy3	-.41	-2.31	-.20	-2.30
10	CrpStgy4	-.42	-2.37	-.05	**-.52**
11	MktStgy1	-.10	**-.57**	-.56	-6.36
12	MktStgy2	-.18	**-1.01**	-.56	-6.39
13	MktStgy3	-.40	-2.29	-.18	-2.02
14	MktStgy4	-.46	-2.61	-.30	-3.43

The analysis suggests that the data are not normally distributed; most of the indicators deviate from normal distribution. However, Supamas Angsuchoti, Somtawin Wijitwanna, and Ratchaneekool Pinyopanuwat (2009) asserted that both $Z_{skewness}$ and $Z_{kurtosis}$ statistics were sensitive to sample size. The larger the sample size, the greater possibility that $Z_{skewness}$ and $Z_{kurtosis}$ fall out of the critical value range. Also, Hair et al. (2006: page 80) stated that "large sample sizes tend to diminish the detrimental effects of non-normality." The current research's sample size of each paired group is greater than 300 observations; thus, no measure to remedy for non-normality is carried out.

5.3. Firms' Profile

The sample is classified according into four industry types: food, automotive and parts, electrical and electronics, and garment and textile (Table 5.4). Of 769 observations, 272 observations (or 35%) are from the automotive and parts industry;

189 observations (or 25%) are from the electrical and electronics industry; and 179 (or 23%) are from the food industry. Companies from the garment and textile industry consist of 94 observations (or 12%). A total of 35 firms (or 5%) identified themselves as members of both the automotive and parts, and electrical and electronics industries.

Table 5.4 also classifies respondents' position. The majority of respondents (600 observations or 78%) held a top management position (president, managing director, and chief executive officer, etc.), or a middle management position (department manager, plant manager, personnel manager, or accounting manager, etc.). Another 169 respondents (or 20%) specified themselves as staff, officers, or by the area of their expertise, such as engineer, secretary, etc.

Table 5.4: Sample Classified by Industry Type and Respondents' Position

Industry Type	**Current Position of Respondents***						**Total**
	1	**2**	**3**	**4**	**5**	**6**	
Food	88 (49%)	55 (31%)	8 (4%)	4 (2%)	19 (11%)	5 (3%)	179 (23%)
Automotive and Parts	91 (33%)	110 (40%)	27 (10%)	17 (6%)	18 (7%)	9 (3%)	272 (35%)
Electrical and Electronics	71 (38%)	82 (43%)	12 (6%)	7 (4%)	9 (5%)	8 (4%)	189 (25%)
Garment and Textile	42 (45%)	33 (35%)	7 (7%)	4 (4%)	2 (2%)	6 (6%)	94 (12%)
Specified as both Automotive and E&E industries	10 (29%)	18 (51%)	1 (3%)	3 (9%)	1 (3%)	2 (6%)	35 (5%)
Total	302 (39%)	298 (39%)	55 (7%)	35 (5%)	49 (6%)	30 (4%)	769 (100%)

*1 = President/Managing Director/Chief Executive Officer/ General Manager/ Owner/Director/Assistant Managing Director, 2 = Manager/Plant (Factory) Manager /Assistant Manager, 3 = Staff/Officer/Leader, 4 = Engineer/Safety Officer/Expert, 5 = Others (Secretary/Advisor/Supervisor/Coordinator/Leader, 6 = Not specified

Figures in Table 5.4 reveal respondents' position in each individual industry. The largest group of respondents in the food and garment and textile industries held a top management position (88 observations or 49% and 42 observations or 45%, respectively). The second largest group of respondents in the two industries held middle management positions (55 observations or 31% and 33 observation or 35%,

respectively). However, the largest group of respondents in automotive and parts and electrical and electronics industries held a middle management position (110 observations or 40% and 82 observations or 43%, respectively). Respondents holding a top management position in the industries made up 91 observations (or 33%) and 71 observations (or 38%), respectively. Approximately 20% of respondents of respondents in each of the four industries held positions other than top or middle management positions.

The current research investigates strategic decisions about corporate environmentalism. The decisions often concern decisions within and across departments in a firm; thus, it is likely that the decisions are made by personnel at management levels. The figures about respondents' position across four industries show that the majority of respondents held positions at the top and middle rank (approximately 80%). This is greatly favorable, in that questionnaires were completed by those knowledgeable about firms' corporate environmentalism decisions.

Respondents were asked about firms' sales volume in 2008. Figures in Table 5.5 indicate that the sample's 2008 sales volumes range from less than 10 million Baht to more than 5,000 million Baht. Of the total sample, about one quarter (198 firms or 27%) reported a 2008 sales volume between 100 million and 500 million Baht. Across four industries, about one quarter of firms reported 2008 sales volumes between 100 million and 500 million Baht: 48 firms (or 28%) in the food industry, 57 firms (or 23%) in the automotive and parts industry, 54 firms (or 30%) in the electrical and electronics industry, and 25 firms (or 27%) in the garment and textile industry.

A little over one quarter of firms reported sales volumes of less than 100 million baht. Firms with the small sales volumes in the food industry are 63 firms (or 36%); in the automotive and parts industry, 93 firms (or 38%); in the electrical and electronics industry, 63 firms (or 36%); and in the garment and textile industry, 43 firms (or 47%). Firms with the larger sales volumes, 100 million Baht to 2,500 million Baht in the food industry are 87 firms (or 51%); in the automotive and parts

industry, 122 firms (or 49%); in the electrical and electronics industry, 84 firms (or 47%); and in the garment and textile industry, 46 firms (or 49%). In short, about one half of firms in each industry reported their sales in this range. Firms with more than 2,500 million Baht sales volumes in the food industry are 23 firms (or 14%); in the automotive and parts industry, 36 firms (or 14%); in the electrical and electronics industry, 30 firms (or 17%); and the garment and textile industry, 4 firms (or 4%).

In general, figures about the sample's 2008 sales volumes depict a similar pattern across industries. Each industry is made up of firms with 2008 sales volumes in all ranges. However, the majority, one third, of firms are in the 100 million and 500 million Baht cohort. Note that 45 out of 772 firms did not report their sales.

Table 5.5: Sample Classified by Firms' Sales in 2008

Sales (Baht)	Industry Type					Total
	Food	Automotive and Parts	Electronics & Electrical	Garment and Textile	Both Automotive and E&E	
< 10 m.	7 (4%)	14 (6%)	9 (5%)	10 (11%)	0 (0%)	40 (6%)
10 - 50 m.	24 (14%)	34 (14%)	36 (20%)	20 (22%)	3 (9%)	117 (16%)
50 - 100 m.	32 (18%)	45 (18%)	18 (10%)	13 (14%)	3 (9%)	111 (15%)
100 – 500 m.	48 (28%)	57 (23%)	54 (30%)	25 (27%)	14 (43%)	198 (27%)
500 – 1,000 m.	17 (10%)	32 (13%)	18 (10%)	16 (17%)	6 (18%)	89 (12%)
1,000 – 2,500 m.	22 (13%)	33 (13%)	12 (7%)	5 (5%)	2 (6%)	74 (10%)
2,500 – 5,000 m.	8 (5%)	13 (5%)	8 (5%)	2 (2%)	2 (6%)	33 (5%)
> 5,000 m.	15 (9%)	23 (9%)	22 (12%)	2 (2%)	3 (9%)	65 (9%)
Total	173	251	177	93	33	727

In terms of number of employees, the sample consists of firms employing as few as 2 employees and as many as 12,000 employees. In general, a large number of firms employed fewer employees. About half of the total sample (373 firms or 49%) are firms employing up to 200 persons (see Table 5.6). A further 284 firms (or 38%) employ between 201 and 1000 employees. In other words, 657 firms (or 88%) of the total sample are firms with less than 1,000 employees.

In each industry, about one half of the sample consists of firms with less than 200 employees: 92 firms (or 52%) in food industry; 122 firms or (47%) in the

automotive and parts industry; 100 firms (or 55%) in the electrical and electronics industry; and 46 firms or (49%) in the garment and textile industry. Some 21% of the sample in both the food industry (36 firms) and in the electrical and electronics industry (38 firms) are firms with between 201 and 500 employees. In the automotive and parts industry, 79 firms (or 30%) have between 201 and 500 employees, while in the garment and textile industry the figure is 27 firms (or 28%). About one quarter of the firms in each of the four industries employed more than 500 employees: in the food industry, 47 firms (or 27%); in the automotive and parts industry, 60 firms (or 24%); in the electrical and electronics industry, 46 firms (or 26%); and in the garment and textile industry, 22 firms (or 22%). In short, the more firms in each cohort, the fewer employees each firm in the cohort hired.

Table 5.6: Sample Classified by Number of Employees

No. of Employees (persons)	Food	Automotive and Parts	Electrical and Electronics	Garment and Textile	Both Automotive and E&E	Total
Less than 100	69 (39%)	68 (26%)	69 (38%)	33 (35%)	4 (12%)	243 (32%)
101 - 200	23 (13%)	54 (21%)	31 (17%)	13 (14%)	9 (26%)	130 (17%)
201 - 300	21 (12%)	32 (12%)	16 (9%)	12 (13%)	3 (9%)	84 (11%)
301 -400	10 (6%)	30 (11%)	13 (7%)	8 (8%)	3 (9%)	64 (9%)
401 - 500	5 (3%)	17 (7%)	9 (5%)	7 (7%)	3 (9%)	41 (5%)
501 - 750	10 (6%)	19 (7%)	11 (6%)	4 (4%)	2 (6%)	46 (6%)
751 -1000	14 (8%)	17 (7%)	9 (5%)	4 (4%)	5 (15%)	49 (7%)
1001-2000	15 (9%)	17 (7%)	12 (7%)	8 (8%)	3 (9%)	55 (7%)
2001 - 3000	2 (1%)	0 (0%)	5 (3%)	3 (3%)	0 (0%)	10 (1%)
3001 – 4000	0 (0%)	3 (1%)	4 (2%)	1 (1%)	1 (3%)	9 (1%)
4001 - 5000	4 (2%)	0 (0%)	1 (1%)	1 (1%)	0 (0%)	6 (1%)
More than 5000	2 (1%)	4 (2%)	4 (2%)	1 (1%)	1 (3%)	12 (2%)
Total	174 (100%)	261 (100%)	184 (100%)	95 (100%)	34 (100%)	749 (100%)
Missing value						23
Total						772
Min.						2
Max						12,000

The majority of firms in the sample are original product manufacturers or OEM manufacturers. Respondents were asked to identify the percentage of their firms' OEM production. OEM products refer to products firms produce and sell them to other companies for reselling to end-users or other firms. Table 5.7 presents the

mean and median values of the percentage of OEM products produced by firms in the sample. Half of the firms in both the automotive and parts and electrical and electronics industries reported that 80% or more of their total products were OEM products. Next come firms in the food industry, with half the firms reporting 70% or more of their production being OEM products. The median for firms in the garment and textile industry is the lowest, with half the firms reporting that 50% or more of their total production was made up of OEM products. Nevertheless, this is still a significant amount.

Table 5.7: Mean and Median of Original Equipment Manufactured Products (OEM)

	Food	**Automotive and Parts**	**Electrical & Electronics**	**Garment & Textile**	**Both Automotive and E&E**	**Total**
Mean	59.19	69.70	69.94	50.77	80.36	
Median	70	80	80	50	80	
No. of Firms	143 (79.4%)	223 (82%)	162 (85.7%)	78 (81.3%)	28 (80%)	634 (82.1%)
Missing Value	37 (20.6%)	49 (18.0%)	27 (14.3%)	18 (18.8%)	7 (20.0%)	138 (17.9%)
Total of Firms	180	272	189	96	35	772

In sum, the majority of respondents (78%) are those who held top or middle management positions. Most firms in the sample (35%) are in the automotive and parts industry. Firms in the food and electrical and electronics industries together make up about one half of the sample (48%). Firms in the garment and textile industry are the smallest group (12%). About one quarter of firms across industries generated sales in 2008 between 100 million and 500 million Baht. In terms of the number of employees, the sample consists of firms employing as a few as 2 people and as many as 12,000 people. However, most of the firms (or 88%) employed up to 1,000 people. Firms in the sample produced OEM products at a high percentage; one half of firms in the food, automotive and parts, electrical and electronics industries produced OEM at 70% - 80% of total products and at 50% in the garment and textiles industry.

5.4. Descriptive Statistics

Mean and correlation estimates of constructs are reported in this section. Mean estimates of constructs are elaborated. Then, correlation estimates are examined.

5.4.1. Mean Statistics of Constructs

Table 5.8 reports mean statistics of variables. The variables include the focal construct, corporate environmentalism, two perceived uncertainties, three internal factors, and three performance outcomes.

The means of corporate environmentalism fir firms among the four industries slightly differs, the mean values range from 3.28 to 3.47, SD = 0.63 – 0.75. The mean of corporate environmentalism for firms in the garment and textile industry is lowest, mean = 3.28, SD = 0.71; whereas for firms in the electrical and electronics industry, it is the highest, mean = 3.47, SD = 0.63.

The mean of perceived market uncertainty for the whole sample is lower than the mean of perceived regulation uncertainty. The mean of perceived market uncertainty is 2.95, SD = 0.90 while the mean of perceived regulation uncertainty is 3.53, SD = 0.69. The means of perceived market uncertainty in the food industry and in the garment and textile industry (mean =3.08, SD = 0.82 and mean = 3.10, SD = 0.94) are slightly higher than the means of perceived market uncertainty in the automotive and parts and in the electrical and electronics industries (mean = 2.84, SD =0.93 and mean =2.96, SD = 0.92, respectively).

Firms in the four industries perceived environmental regulation as almost evenly uncertain: the mean values of perceived regulation uncertainty of firms in the food, automotive and parts, electrical and electronics, and garment and textile industries are very close, 3.58, 3.51, 3.55, and 3.58; SD, 0.68, 0.72, 0.65, and 0.71, respectively.

Table 5.8: Mean Statistics of Constructs

Variables	Industries	N	Mean	SD	Min.	Max.
MktUn	Food	180	3.08	0.82	1.00	5.00
	Automotive & Parts	272	2.84	0.93	1.00	5.00
	Electrical & Electronics	189	2.96	0.92	1.00	5.00
	Garment & Textile	96	3.10	0.84	1.00	5.00
	Both Auto & E&E	35	2.56	0.90	1.00	5.00
	Total	772	2.95	0.90	1.00	5.00
RegUn	Food	180	3.58	0.68	1.60	5.00
	Automotive & Parts	270	3.51	0.72	1.40	5.00
	Electrical & Electronics	189	3.55	0.65	1.40	5.00
	Garment & Textile	96	3.58	0.71	1.00	5.00
	Both Auto & E&E	35	3.24	0.62	2.00	5.00
	Total	770	3.53	0.69	1.00	5.00
CE	Food	180	3.42	0.75	1.00	5.00
	Automotive & Parts	272	3.31	0.68	1.38	5.00
	Electrical & Electronics	189	3.47	0.63	1.00	5.00
	Garment & Textile	96	3.28	0.71	1.13	5.00
	Both Auto & E&E	35	3.36	0.65	2.00	4.63
	Total	772	3.37	0.69	1.00	5.00
Reltn	Food	180	3.30	0.74	1.50	5.00
	Automotive & Parts	272	3.04	0.66	1.25	5.00
	Electrical & Electronics	189	3.16	0.70	1.25	5.00
	Garment & Textile	96	3.10	0.77	1.25	5.00
	Both Auto & E&E	35	2.95	0.72	1.50	4.00
	Total	772	3.13	0.71	1.25	5.00
ShVsn	Food	180	3.21	0.90	1.00	5.00
	Automotive & Parts	272	3.18	0.89	1.00	5.00
	Electrical & Electronics	189	3.17	0.93	1.00	5.00
	Garment & Textile	96	2.97	0.90	1.00	5.00
	Both Auto & E&E	35	3.25	0.96	1.00	5.00
	Total	772	3.16	0.91	1.00	5.00
TchCp	Food	180	3.07	0.86	1.00	5.00
	Automotive & Parts	272	2.88	0.76	1.00	5.00
	Electrical & Electronics	189	3.05	0.80	1.00	4.86
	Garment & Textile	96	2.94	0.83	1.00	5.00
	Both Auto & E&E	35	2.99	0.81	1.71	4.71
	Total	772	2.98	0.81	1.00	5.00
MktPrf	Food	180	2.09	1.30	.00	5.00
	Automotive & Parts	272	2.08	1.26	.00	5.00
	Electrical & Electronics	189	2.18	1.24	.00	5.00
	Garment & Textile	96	1.92	1.19	.00	4.67
	Both Auto & E&E	35	2.49	1.13	.00	5.00
	Total	772	2.11	1.25	.00	5.00

Table 5.8: Descriptive Statistics of Constructs (continued)

Variables	Industries	N	Mean	SD	Min.	Max.
SocPrf	Food	180	3.07	1.23	.00	5.00
	Automotive & Parts	272	2.88	1.22	.00	5.00
	Electrical & Electronics	189	3.02	1.20	.00	5.00
	Garment & Textile	96	2.79	1.04	.00	5.00
	Both Auto & E&E	35	3.05	1.14	.00	5.00
	Total	772	2.96	1.19	.00	5.00
EnvPrf	Food	180	3.09	0.97	.00	5.00
	Automotive & Parts	272	2.87	0.94	.00	5.00
	Electrical & Electronics	189	3.14	1.01	.00	5.00
	Garment & Textile	96	2.87	0.83	.00	4.60
	Both Auto & E&E	35	3.21	0.86	.60	5.00
	Total	772	3.00	0.95	.00	5.00

Among the three internal factors of firms for the whole sample, the mean of shared vision (mean = 3.16, SD = 0.91) is greater than that of the other two capabilities of firms: mean of relationship with external organizations = 3.13, SD = 0.71, and of technological capability = 2.98, SD = 0.81. However, they are not greatly different. The mean of shared vision in the food industry (mean = 3.21, SD = 0.90) is slightly higher than that in the automotive and parts industry (mean = 3.18, SD = 0.89) and that in the electrical and electronics industry (mean = 3.17, SD = 0.93). The mean of shared vision in the garment and textile industry is the lowest (mean = 2.97, SD = 0.90).

The mean of relationship with external organizations of firms in the food industry is the highest (mean = 3.30, SD = 0.74). The means of the variable in the electrical and electronics and garment and textile industries are slightly different: in the electrical and electronics industry, mean = 3.16, SD = 0.70 and in the garment and textile industry, mean = 3.10, SD = 0.77. In the automotive and parts industry, the mean of relationship with external organizations is 3.04, SD = 0.66.

Among the four industries, the mean of technological capability of firms in the automotive and parts industry is the lowest (2.88, SD = 0.76), whereas the mean in the food industry is the highest (3.07, SD = 0.86). The means in the food industry (mean

= 3.07, SD = 0.86) and in the electrical and electronics industry (mean = 3.05, SD = 0.80) are very close. The mean in the garment and textile industry is 2.94, SD = 0.83.

The mean of marketing performance for the whole sample (mean = 2.11, SD = 1.25) is obviously the lowest among the means of three performances while the means of social and environmental performance constructs are almost the same (mean = 2.96, SD = 1.19, mean = 3.00, SD = 0.95, respectively).

The mean of marketing performance of firms in the garment and textile industry is the lowest (mean = 1.92, SD = 1.19), whereas the mean of firms in the electrical and electronics industry is the highest (mean = 2.18, SD = 1.24). The means of marketing performance of firms in the food and automotive and parts industries are very close (mean = 2.09, SD = 1.30 and mean = 2.08, SD = 1.26, respectively).

The means of social performance of firms in the garment and textile industry (mean = 2.79, SD = 1.04) and of firms in the automotive and parts industry (mean = 2.88, SD = 1.22) are lower than the means of firms in the food industry (mean = 3.07, SD = 1.23) and of firms in the electrical and electronics industry (mean = 3.02, SD = 1.20).

Similar to the pattern of the mean of social performance, the means of environmental performance in the garment and textile industry (mean = 2.87, SD = 0.83) and of firms in the automotive and parts industry (mean = 2.87, SD = 0.94) are lower than the means of firms in the food industry (mean = 3.09, SD = 0.97) and in the electrical and electronics industry (mean = 3.14, SD = 1.01).

In general, means of nine constructs are around average. Only mean of marketing performance is obviously low.

5.4.2. Correlation Statistics of Constructs

Table 5.9 reports bivariate correlations among constructs. Among the first-order constructs of corporate environmentalism (CE), internal environmental orientation (InEnOr), external environmental orientation (ExEnOr), corporate environmental strategy (CrpStgy), and marketing environmental strategy (MktStgy), all correlations are positive and significant, between 0.344 and 0.684, p-value < 0.05. The correlation coefficients of the relationships between external environmental orientation and the other three first-order constructs: internal environmental orientation, corporate environmental strategy, and marketing environmental strategy, are 0.344, 0.405, and 0.344, p-value < 0.05, respectively. They all are lower than the correlation coefficients among the three constructs: internal environmental orientation, corporate environmental strategy, and marketing environmental strategy (r = 0.526 – 0.684, p-value < 0.05). The four first-order constructs are highly related to corporate environmentalism (r = 0.658 – 0.866, p-value < 0.05). Perceived market uncertainty (MktUn) and perceived regulation uncertainty (RegUn) are positively related to each other (r = 0.413, p-value < 0.05). Firms with a high perceived market uncertainty are likely to have a positive and high perceived regulation uncertainty. Although perceived market uncertainty is significantly negatively related to corporate environmentalism (r = -0.176, p-value < 0.05), perceived regulation uncertainty is insignificantly related (r = -0.064, p-value > 0.05). Both perceived market uncertainty and perceived regulation uncertainty are weakly negatively related to shared vision (ShVsn) and technological capability (TchCp); the correlations are between -0.172 and -0.229 at p-value < 0.05. Perceived market uncertainty is not significantly related to relationship with external organizations (Reltn) (r = -0.037, p-value > 0.05) but perceived regulation uncertainty is weakly positively related to the variable (r = 0.114, p-value < 0.05). Correlations among three internal factors are positive and significant, between 0.412 and 0.630, p-value < 0.05.

Corporate environmentalism is positively related to its internal factors, relationship with external organizations, shared vision, and technological capability(r = 0.392, 0.578, and 0.725, p-value < 0.05, respectively). In addition, corporate

Table 5.9: Correlation Statistics of Constructs

	CE	InEnOr	ExEnOr	CrpStgy	MktStgy	MktUn	RegUn	Reltn	ShVsn	TchCap	MktPrf	SocPrf	EnvPrf
CE	1												
InEnOr	.812**	1											
ExEnOr	.658**	.344**	1										
CrpStgy	.866**	.684**	.405**	1									
MktStgy	.808**	.526**	.344**	.645**	1								
MktUn	-.176**	-.218**	.005	-.163**	-.172**	1							
RegUn	-.064	-.180**	.097**	-.065	-.047	.413**	1						
Reltn	.392**	.392**	.215**	.355**	.273**	-.037	.114**	1					
ShVsn	.578**	.669**	.221**	.514**	.413**	-.229**	-.188**	.412**	1				
TchCap	.725**	.724**	.334**	.644**	.573**	-.196**	-.172**	.476**	.630**	1			
MktPrf	.284**	.225**	.093**	.245**	.322**	-.151**	-.144**	.115**	.163**	.232**	1		
SocPrf	.365**	.337**	.162**	.333**	.314**	-.067	-.126**	.162**	.309**	.312**	.385**	1	
EnvPrf	.280**	.280**	.144**	.237**	.218**	-.061	-.106**	.155**	.264**	.280**	.330**	.538**	1

** p-value < 0.05

environmentalism is positively related to its consequences, marketing performance (MktPrf), social performance (SocPrf), and environmental performance (EnvPrf) (r = 0.284, 0.365, and 0.280, p-value < 0.05). Correlations among the three performance outcomes of firms are significantly positive, between 0.330 and 0.538, p-value < 0.05.

5.5. Assessment of the Measurement Model, Construct Validity, and Measurement Invariance Model

Anderson and Gerbing's (1988) two-step approach supports the idea that before testing the proposed structural model, the measurement model and construct validity should be assessed. The measurement model assesses relationships between observed variables and their corresponding constructs while the structural model tests the proposed model and hypothesized relationships among constructs (Hair et al., 2006; Anderson and Gerbing, 1988). This research follows Anderson and Gerbing's (1988) two-step approach. First, the measurement model and construct validity are examined by assessing the model's goodness of fit, convergent validity and discriminant validity. Hair et al. (2006) argued that multiple group analysis required the sample groups in comparison pass metric invariance criteria, or the measurement

invariance model. Additionally, Cronbach's alpha of is assessed. Constructs of the interest include corporate environmentalism, a focal construct of this study, as well as five antecedent and three consequent constructs.

5.5.1. Measurement Model of Corporate Environmentalism

As conceptualized by Banerjee (2002), corporate environmentalism consists of four dimensions: internal environmental orientation (InEnOr), external environmental orientation (ExEnOr), corporate environmental strategy (CrpStgy), and marketing environmental strategy (MktStgy). The four first-order constructs were measured, in this research, by 17 indicators: InEnOr was measured by 4 items, EnExOr by 5 items, CrpStgy by 4 items, and MktStgy by 5 items. During the model respecification process, 3 items of external environmental orientation (EnEnOr1, EnEnOr2, and EnEnOr3) loaded very low to the external environmental orientation construct; thus, they were deleted. Consequently, 14 indicators are used to estimate the measurement model of corporate environmentalism.

Table 5.10 presents estimates of the measurement model of corporate environmentalism. Following Hair et al.'s (2006) guidelines on assessment of the measurement model, construct validity, and reliability, (1) goodness of fit, (2) convergent validity, (3) discriminant validity, and (4) Cronbach's alpha are all investigated.

Goodness of fit indices assess how well the model fits data. Reported model fit indices suggest a good fit model. The sample's statistical significance of chi-square is higher than 0.05 (p-value = 0.06889), suggesting that the observed covariance equals the estimated covariance, or the model fits the data. Moreover, Root Mean Square Error of Approximation (RMSEA), 0.020, is well below the acceptable level, 0.10, as suggested by Hair et al. (2006). Normed Fit Index (NFI) and Comparative Fit Index (CFI) are statistics ranging from 0 to 1, where 1 indicates a perfect fit model (Hair et al., 2006). The sample's NFI and CFI suggest that the model fits the data very well.

Thus, goodness of fit indices indicate that the model of corporate environmentalism fits the data well.

Table 5.10: The Standardized Coefficients and Statistics in the Measurement Model of Corporate Environmentalism

Items	First-Order Constructs												Second-Order Construct		
	Internal Environmental Orientation			External Environmental Orientation			Corporate Environmental Strategy			Marketing Environmental Strategy			Corporate Environmentalism		
	λ_y	SE	t-value	λ_y	SE	t-value	λ_y	SE	t-value	λ_y	SE	t-value	γ	SE	t-value
InEnOr1	.76	n/a	n/a												
InEnOr2	.82	0.03	30.10												
InEnOr3	.87	0.04	21.63												
InEnOr4	.90	0.04	22.61												
ExEnOr4				.94	n/a	n/a									
ExEnOr5				.48	0.06	7.46									
CrpStgy1							.87	n/a	n/a						
CrpStgy2							.77	0.03	22.15						
CrpStgy3							.90	0.03	27.60						
CrpStgy4							.89	0.03	26.45						
MktStgy1										.86	n/a	n/a			
MktStgy2										.90	0.03	35.11			
MktStgy3										.89	0.04	20.73			
MktStgy4										.82	0.04	20.18			
InEnOr													.81	0.04	18.29
ExEnOr													.54	0.04	14.15
CrpStgy													.92	0.04	23.88
MktStgy													.73	0.04	18.19
Extracted Variance	0.70			0.56			0.74			0.75			0.58		
Construct Reliability	0.90			0.69			0.92			0.92			0.84		
Cronbach's Alpha	0.92			0.63			0.90			0.92			0.79		

Goodness of Fit Indices: Chi-square = 62.11, df = 47, p-value = 0.06889, RMSEA = 0.020, NFI = 1.00, CFI = 1.00
n/a = not estimated, SE = Standard Error

After assessing the model fit, construct validity is assessed, particularly convergent validity and discriminant validity, along with reliability. Convergent validity refers to how well observed variables of a construct converge (Hair et al., 2006). Hair et al. (2006) explained that convergent validity was assessed by factor loading, extracted variance, and construct reliability. Discriminant validity means how

a construct differs from other constructs (Hair et al., 2006). Reliability is assessed by Cronbach's alpha coefficient.

First, convergent validity of the four first-order constructs of corporate environmentalism is examined. Hair et al. (2006) contended that factor loading of observed variables should be higher than 0.5, preferably greater than 0.7. Factor loadings of 14 indicators of the four first-order constructs, except one, external environmental orientation5 (ExEnOr5, 0.48), are higher than 0.7, ranging from 0.73 to 0.94 (see Table 5.10). Hair et al. (2006) also argued that extracted variance of a construct should be greater than 0.50 in order to demonstrate convergent validity. Evidently, the extracted variance of all four first-order constructs is higher than the suggested value (0.56 to 0.75). Finally, the preferred construct reliability estimate should be higher than 0.7 (Hair et al., 2006). Three out of four first-order constructs meet the criteria value. The construct reliability of external environmental orientation (ExEnOr) is slightly below 0.7 (0.69). Hence, the estimates of factor loading, extracted variance, and construct reliability support the convergent validity of all four first-order constructs.

Hair et al. (2006) stated that discriminant validity was another indicator assessing construct validity; it assesses how a construct differs from other constructs. It is assessed by comparing extracted variance of the corresponding constructs with the squared correlation among the constructs (Hair et al., 2006). Table 5.11 presents extracted variance and squared correlation of internal environmental orientation (InEnOr), external environmental orientation (ExEnOr), corporate environmental strategy (CrpStgy), and marketing environmental strategy (MktStgy). Extracted variance estimates of internal environmental orientation, external environmental orientation, corporate environmental strategy, and marketing environmental strategy are 0.70, 0.56, 0.74, and 0.75 respectively. The extracted variance estimate of internal environmental orientation (0.70) is greater than the squared correlations between internal environmental orientation and the other three constructs (0.09, 0.56, and 0.30). Likewise, the extracted variance of external environmental orientation (0.56) is larger than the squared correlation between the construct with corporate

environmental strategy and marketing environmental strategy (0.14 and 0.07). Lastly, the extracted variance of corporate environmental strategy (0.74) is larger than the squared correlation between corporate environmental strategy and marketing environmental strategy (0.46). Consequently, the estimates of extracted variance of and squared correlations among four first-order constructs of corporate environmentalism indicate that all four constructs differ from one another.

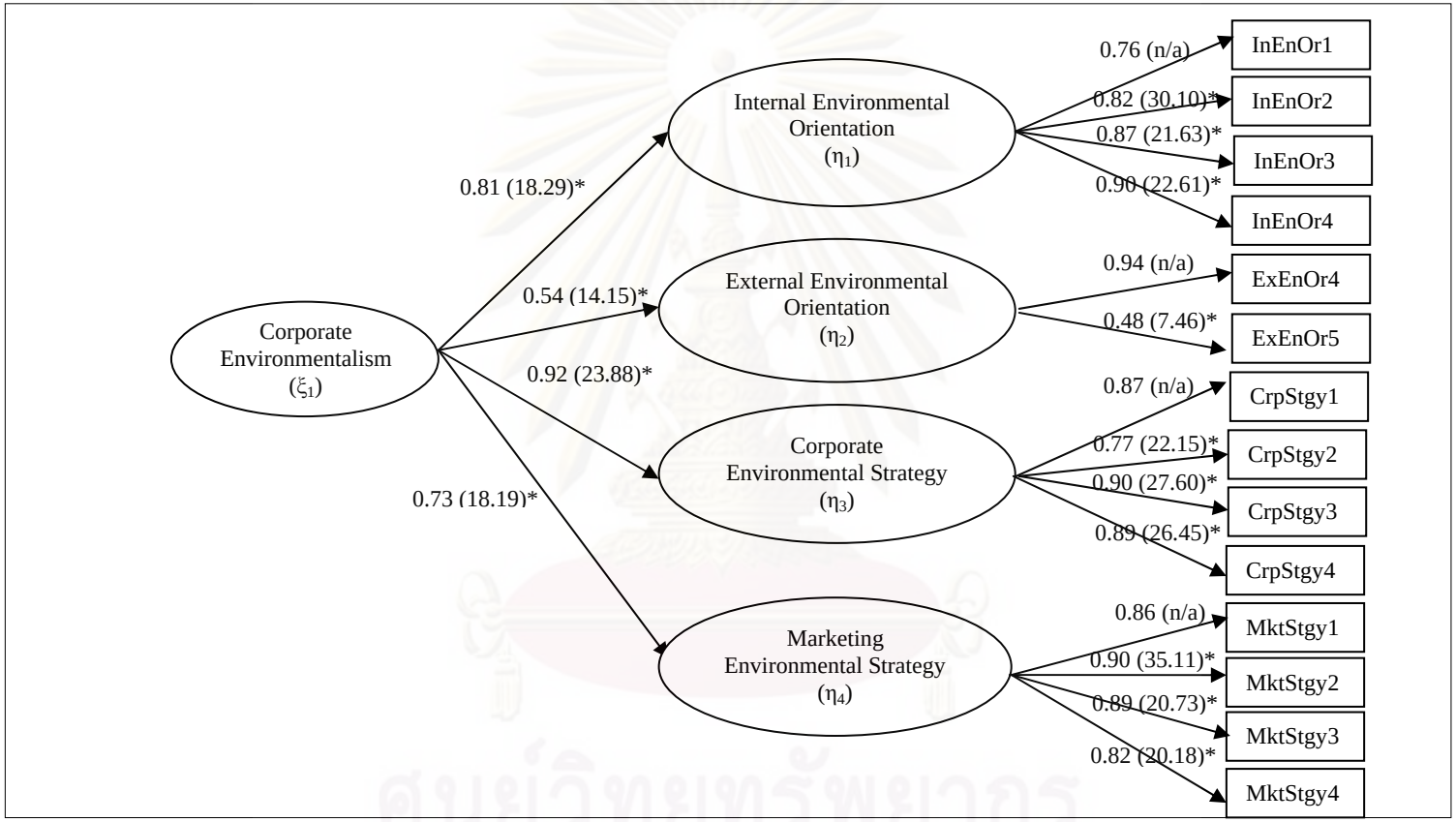
Table 5.11: The Squared Correlation of Four First-Order Constructs of Corporate Environmentalism

	Internal Environmental Orientation	**External Environmental Orientation**	**Corporate Environmental Strategy**	**Marketing Environmental Strategy**	**Corporate Environmentalism**
Internal Environmental Orientation	1				
External Environmental Orientation	0.09	1			
Corporate Environmental Strategy	0.56	0.14	1		
Marketing Environmental Strategy	0.30	0.07	0.46	1	
Extracted Variance	0.70	0.56	0.74	0.75	0.58

In addition to convergent and discriminant validity discussed above, Cronbach's alpha of the four first-order constructs is also estimated. Cronbach's alpha is a statistic indicating how internally consistent a construct is (Hair et al., 2006). In order words, it measures reliability of a construct. Table 5.10 reports that three of four Cronbach's alphas are well beyond 0.7, a preferred value suggested by Hair et al. (2006).

Although, the Cronbach's alpha of external environmental orientation is 0.63, Hair et al. (2006) contended that Cronbach's alpha between 0.6 and 0.7 is acceptable, particularly in exploratory research.

Figure 5.1: The Measurement Model of Corporate Environmentalism



Goodness of Fit Indices: Chi-square = 62.11, df = 47, p-value = 0.06888, RMSEA = 0.020, NFI = 1.00, CFI = 1.00

Note: number represents beta coefficient and t-value (in parentheses), * p-value < 0.05, n/a indicates a specified value; thus, t-value is not estimated

Finally, corporate environmentalism, the second-order construct, was assessed. Factor loading of external environmental orientation (0.54), the only loading among the four indicators of corporate environmentalism, is lower than 0.7, the preferred level (Table 5.10). However, extracted variance (0.58), construct reliability (0.84), and Cronbach's alpha (0.79) of the construct are satisfactory.

By and large, the assessment above shows that the measurement model, construct validity, and reliability of corporate environmentalism and its four first-order constructs are satisfactory with some weaknesses on the external environmental orientation construct. Figure 5.1 depicts the measurement model of corporate environmentalism.

5.5.2. Measurement Model of Eight Constructs and Corporate Environmentalism

Corporate environmentalism is, then, incorporated in the measurement model together with the other eight constructs. Of the eight constructs, five are the antecedents of corporate environmentalism: perceived uncertainty of environmental market (MktUn), perceived uncertainty of environmental regulation (RegUn), relationship with external organizations (Reltn), shared vision (ShVsn), and environmental technological capability (TchCp); and three are the consequences: marketing performance (MktPrf), social performance (SocPrf), and environmental performance (EnvPrf). The four first-order constructs of corporate environmentalism (internal environmental orientation, external environmental orientation, corporate environmental strategy, and marketing environmental strategy) are now treated like indicators. These nine constructs are put together and assessed for goodness of fit, convergent validity, discriminant validity, and Cronbach's alpha coefficient.

Initially, the nine constructs were measured by 42 indicators. Three indicators of perceived uncertainty of environmental market (MktUn3, MktUn4, and MktUn5), two of social performance (SocPrf1 and SocPrf2), and one of environmental performance (EnPrf6) were deleted during the respectification process because of

Table 5.12: The Measurement Model of Nine Constructs

Items	Market Uncertainty			Regulation Uncertainty			Relationship with External Organizations			Shared Vision			Technological Capability			Corporate Environmentalism			Marketing Performance			Social Performance			Environmental Performance		
	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value
MktUn1	.82	0.04	20.43																								
MktUn2	.91	0.04	22.27																								
RegUn1				.68	0.04	15.66																					
RegUn2				.53	0.04	14.06																					
RegUn3				.58	0.04	15.42																					
RegUn4				.62	0.04	16.62																					
RegUn5				.83	0.04	21.64																					
Reltn1							.82	0.03	25.31																		
Reltn2							.87	0.03	27.43																		
Reltn3							.90	0.03	29.36																		
Reltn4							.92	0.03	27.16																		
ShVsn1										.88	0.03	28.56															
ShVsn2										.85	0.03	27.11															
ShVsn3										.92	0.04	24.23															
TchCp1													.71	0.03	21.29												
TchCp2													.77	0.03	24.29												
TchCp3													.89	0.03	25.94												
TchCp4													.77	0.03	24.18												
TchCp5													.79	0.03	25.26												
TchCp6													.83	0.03	27.16												
TchCp7													.86	0.03	28.72												

Table 5.12: The Measurement Model of Nine Constructs (continued)

Items	Market Uncertainty			Regulation Uncertainty			Relationship with External Organizations			Shared Vision			Technological Capability			Corporate Environmentalism			Marketing Performance			Social Performance			Environmental Performance		
	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value	λ_x	SE	t-value
InExOr																.88	0.03	29.33									
ExEnOr																.38	0.04	10.31									
CrpStgy																.77	0.03	24.44									
MktStgy																.67	0.03	19.08									
MktPrf1																			.95	0.03	34.70						
MktPrf2																			.92	0.03	32.88						
MktPrf3																			.83	0.03	28.17						
SocPrf1																						.87	0.03	29.38			
SocPrf2																						.88	0.03	30.10			
SocPrf3																						.84	0.03	27.92			
EnvPrf1																									.86	0.04	24.11
EnvPrf2																									.79	0.03	22.82
EnvPrf3																									.77	0.04	19.14
EnvPrf4																									.80	0.04	22.44
EnvPrf5																									.89	0.05	19.50
Extracted Variance	0.75			0.43			0.77			0.78			0.65			0.49			0.81			0.75			0.68		
Construct Reliability	.86			.79			.93			.91			.93			.78			.93			.90			.92		
Cronbach's Alpha	.85			.79			.92			.87			.92			.79			.93			.90			.91		

Goodness of Fit Indices: Chi-square = 534.94, df = 485, p-value = 0.05789, RMSEA = 0.012, NFI = 0.99, CFI = 1.00

*p-value < 0.05

their significantly low loadings to the corresponding constructs. As a result, nine constructs are measured by 36 indicators. Table 5.12 shows the statistics of the measurement model.

First, the measurement model's goodness of fit is assessed. The goodness of fit indices suggest a good fit model. The statistical significance of chi-square is higher than 0.05 (p-value = 0.05789). RMSEA is satisfactorily low (0.012). NFI and CFI are almost or equal to 1 (0.99 and 1.00 respectively). Thus, a good fit model is supported.

Assessment of convergent validity is examined by factor loading, extracted variance, and construct reliability. Factor loadings of indicators are higher than 0.7, except that of RegUn1 (0.68), RegUn2 (0.53), RegUn3 (0.58), RegUn4 (0.62), ExEnOr (0.38), and MktStgy (0.67). However, among these six indicators, only ExEnOr (0.38) is lower than 0.5, the acceptable level. Extracted variance of the nine constructs meets the criteria (higher than 0.50), except that of perceived uncertainty of regulation (0.43) and corporate environmentalism (0.49), which are slightly below 0.50. However, construct reliability of all constructs is satisfactory, ranging from 0.78 to 0.93. Despite the low factor loading of external environmental orientation (0.38), a slightly low extracted variance of perceived regulation uncertainty (0.43), and of corporate environmentalism (0.49), other estimates suggest that, in general, convergent validity of the nine constructs is acceptable.

After examining the convergent validity, the discriminant validity of the nine constructs is assessed. The extracted variance, shown in Table 5.13, of perceived uncertainty of environmental market (0.75), perceived uncertainty of environmental regulation (0.43), relationship with external organizations (0.77), shared vision (0.78), environmental technological capability (0.65), corporate environmentalism (0.49), marketing performance (0.81), social performance (0.75), and environmental performance (0.68) is well above the squared correlations of the corresponding constructs and other constructs with one exception (Table 5.13). The extracted variance of technological capability is 0.65 is lower than the squared correlation between the capability and corporate environmentalism (0.74). The estimates do not

support the discriminant validity between technological capability and corporate environmentalism. As for other constructs, the validity is supported.

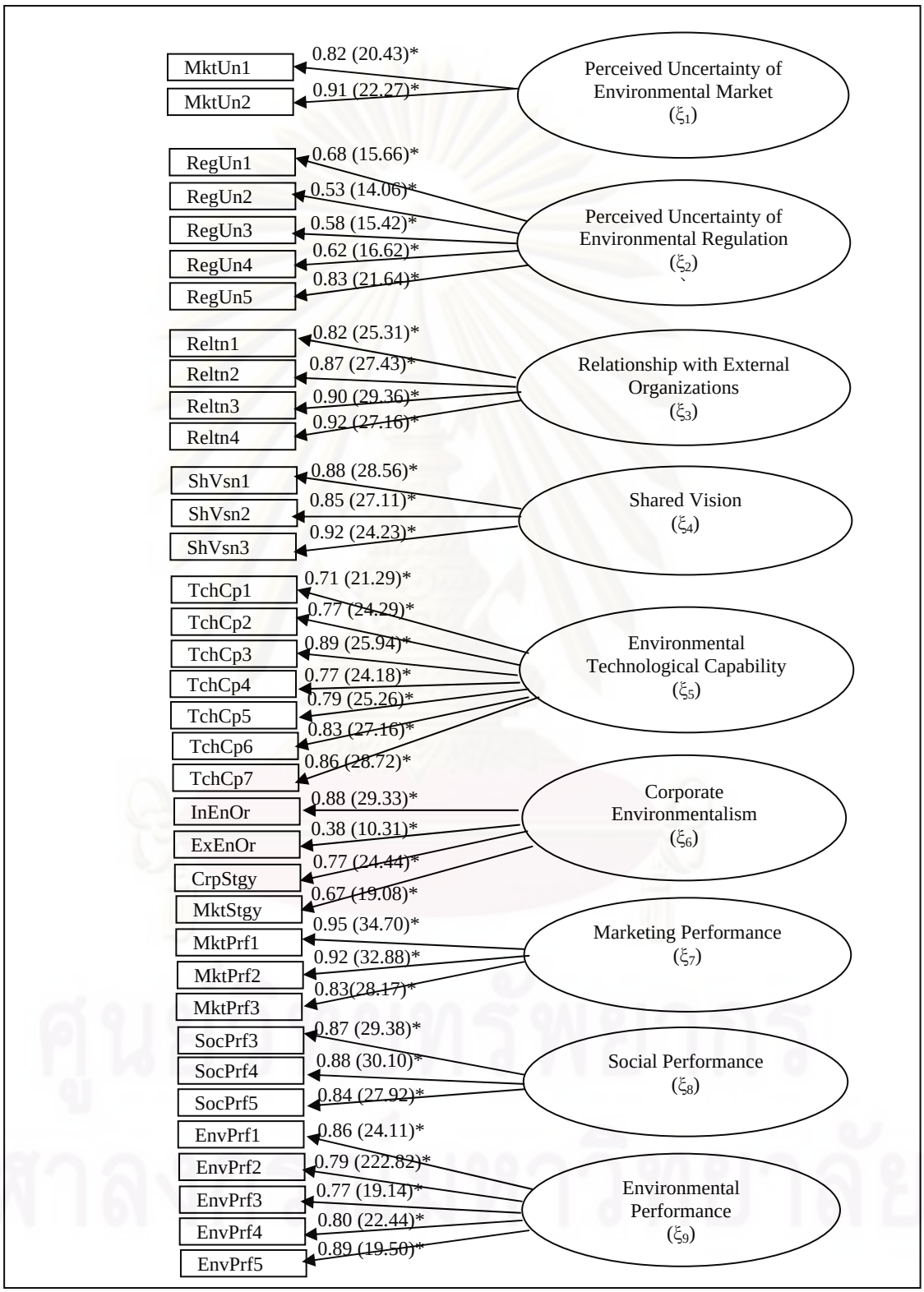
Table 5.13: The Squared Correlation of Nine Constructs

	MktUn	**RegUn**	**Reltn**	**ShVsn**	**TchCp**	**CE**	**MktPrf**	**SocPrf**	**EnvPrf**
MktUn	1								
RegUn	0.16	1							
Reltn	0.02	0.03	1						
ShVsn	0.04	0.04	0.27	1					
TchCp	0.04	0.04	0.32	0.45	1				
CE	0.00	0.03	0.31	0.53	**0.74**	1			
MktPrf	0.03	0.04	0.04	0.03	0.06	0.10	1		
SocPrf	0.00	0.03	0.05	0.11	0.12	0.18	0.17	1	
EnvPrf	0.01	0.02	0.05	0.07	0.09	0.10	0.12	0.36	1
Extracted Varience	0.75	0.43	0.77	0.78	0.65	0.49	0.81	0.75	0.68

Anderson and Gerbing (1988) suggested that an alternative method to test discriminant validity. It is done by comparing the chi-square statistic of the measurement model in which the correlation estimate of the two interested constructs is freely estimated with that of the model in which correlation estimate of the constructs is constrained to 1. Significant increase (decrease) in chi-square indicates that constraining the correlation to 1 worsens (does not worsen) the model fit; thus, the correlation of the two constructs does not (does) equal 1 and the discriminant validity of the two constructs is (not) confirmed (Anderson and Gerbing, 1988).

Following Anderson and Gerbing's (1998) suggestion, a measurement model of technological capability and corporate environmentalism is estimated. The model's goodness of fit indices indicate a good fit model (chi-square = 27.85, df = 25, p-value = 0.31475, RMSEA = 0.012). The correlation estimate of the two is 0.84, t-statistic = 50.64. After constraining the correlation to 1, the resulting chi-square is 202.34, df = 26, p-value = 0.0000, RMSEA = 0.094. The significance of chi-square is lower than 0.05 and chi-square statistic increase by 174.49 (202.34 – 27.85 = 174.49), which is significantly higher than 3.84, the critical chi-square value at 1 degree of freedom. Thus, it can be concluded that the correlation of the technological capability construct and the corporate environmentalism construct is not a perfect one. Discriminant validity between the two is confirmed. The two constructs are two independent, but

Figure 5.2: The Measurement Model of Nine Constructs



Model Fit Indices: Chi-square = 534.94, df = 485, p-value = 0.05789, RMSEA = 0.012, NFI = 0.99, CFI = 1.00

* p –value < 0.05

closely related, constructs. Consequently, with the assistance of Hair et al.'s (2006) and Anderson and Gerbing's (1988) method, dismcriminant validity of the nine constructs is confirmed. Table 5.12 also reports Cronbach's alpha coefficients of all nine constructs. The estimates are well above the acceptable level, 0.70.

Assessment of the measurement model, convergent validity, discriminant validity, and reliability of all constructs indicates that construct validity of all nine constructs is satisfactory with weaknesses in that the factor loading of external environmental orientation is low and that extracted variances of perceived regulation uncertainty and corporate environmentalism are slightly lower than 0.05. Figure 5.2 graphically presents the measurement model of all nine constructs.

5.5.3. Measurement Invariance Model

The moderating effect model and the simultaneous effect model examine the moderating effect of two external factors, perceived market uncertainty and perceived regulation uncertainty, on the associations between internal factors and corporate environmentalism. It is hypothesized that the perceived uncertainty of the two sources moderates the relationships. In other words, it is proposed that the strength and/or direction of the associations between internal factors and corporate environmentalism of firms with a high perceived market uncertainty differ from those of firms with a low market uncertainty. Likewise, the strength and/or direction of the associations between internal factors and corporate environmentalism of firms with a high perceived regulation uncertainty are proposed to be different from those of firms with a low regulation uncertainty.

Multiple group analysis with structural equation modeling facilitates the test of this moderating effect (Hair et al. 2006). It is done by (1) arranging the sample into two (or more) separate groups according to the characteristics being tested, i.e. high (versus low) perceived market uncertainty and high (versus low) perceived regulation uncertainty, and (2) comparing the coefficients of the hypothesized relationship of the two groups to determine whether or not they are equal. If they are not significantly

different, the group characteristic that splits the sample does not moderate the relationship. If they differ, the characteristic moderates the relationship. However, in order to accurately compare the hypothesized relationship between the paired groups, the groups have to pass the metric invariance test, or at least the partial metric invariance test (Hair et al., 2006).

The metric invariance test assesses the extent to which respondents from different groups (i.e., high and low perceived market uncertainty groups) uniquely or indifferently understand and interpret scales used in the measurement model (Hair et al., 2006). In other words, it examines whether or not respondents in one group understand the measurement scales in the same way as respondents in the other group do. In the current research, the metric invariance between firms with a high (versus low) perceived market uncertainty and the metric invariance between firms with a high (versus low) perceived regulation uncertainty are investigated. The following assesses the metric invariance of the market uncertainty pair and the regulation uncertainty pair.

5.5.3.1. Measurement Invariance Model of the Market Uncertainty Pair

Table 5.14 reports estimates of the measurement invariance analysis of the high (versus low) environmental market uncertainty groups. The measurement invariance analysis follows the procedure given by Hair et al. (2006). The key point of the analysis is to evaluate the change in chi-square goodness of fit index when constraining parameters in one group to be equivalent to those in the other group. If the chi-square goodness of fit statistically worsens; then, the equivalence or invariance is not confirmed.

First, the high market uncertainty group and the low market uncertainty group, as two separate samples, were estimated independently. The results in Table 5.14 indicate that as two separate groups, the models of the high and low market uncertainty groups fit the data (chi-square = 551.92 and 551.92, df = 504 and 499,

p-value = 0.069 and 0.050, respectively). Then, the two separate groups were simultaneously estimated. Hair et al. (2006) maintained that "these fit indices now refer to how accurately the measurement model reproduces the observed covariance matrix for both [groups, indicating that]…the same factor structure is appropriate in either sample" (Hair et al., 2006: page 828).

Chi-square of the factor structure equivalence model is 1016.62, df = 954, p-value = 0.078. The results confirm that the high and low market uncertainty groups share the same factor structure. Next, all factor loadings of both groups (LX) are constrained to be equal in order to evaluate changes in the chi-square statistic. The resulting chi-square of factor loading equivalence model is 1046.21 with df = 981, p-value = 0.073.

Table 5.14: Results of Measurement Invariance for the Market Uncertainty Pair

	χ^2	df	p-value	RMSEA	NFI	CFI	$\Delta\chi^2$	Δdf	Critical Value
Independent groups									
1.1. High Market Uncertainty	551.92	504	0.069	0.016	.97	1.00			
1.2. Low Market Uncertainty	551.92	499	0.050	0.018	.97	1.00			
Totally Free Model	1103.85	1003	0.014	0.017	.97	1.00			
Factor Structure Equivalence*	1016.62	954	0.078	0.014	.97	1.00			
Factor Loading Equivalence (LX)	1046.21	981	0.073	0.014	.97	1.00	29.59	27	χ^2 at 27 df = 40.113
Factor Covariance Equivalence	1108.97	1026	0.036	0.015	.97	1.00	62.76	45	Not tested
Error Variance Equivalence	1448.58	1143	0.000	0.028	.96	0.99	339.61	117	Not tested

*The model is the totally free model which has been fitted so that its chi-square significance is greater than 0.05.

The chi-square worsens by 29.59 (1046.21 – 1016.62) as compared to the chi-square of the factor structure equivalence model. The critical chi-square value with 27 degrees of freedom is 40.113, which is higher than the sample chi-square (29.59). Thus, factor loadings of the high market uncertainty group and the low market uncertainty group are invariant.

Hair et al. (2006) contended that in order to compare relationships between groups, partial metric invariance of the measurement model needed to be confirmed. Partial metric invariance refers to at least two factor loading estimates for each construct being equal between groups. Partial metric invariance can be tested by

comparing the chi-square of the factor structure equivalence model to the chi-square of the factor loading equivalence model. In this instance, the chi-square change of the factor loading equivalence model, a model with factor loadings between the two groups constrained to be equal, does not indicate a worse model fit. Therefore, the two groups are metric invariant, enabling comparisons of the hypothesized relationships in further analysis in the structural model. Factor covariance equivalence and error variance equivalence models are not further tested.

5.5.3.2. Measurement Invariance Model of the Regulation Uncertainty Pair

In this subsection, the sample is split by the level of regulation uncertainty, resulting in the high and low perceived regulation uncertainty groups. Following the same procedure performed to test the metric invariance of the market uncertainty pair in the previous subsection, the goodness of fit indices of the paired regulation uncertainty groups when they are estimated independently indicate that the models fit the data (Table 5.15). The high regulation uncertainty group reports chi-square = 576.20, df = 525, p-value = 0.060 and the low regulation uncertainty group reports chi-square = 566.68, df =515, p-value = 0.057. When the two groups are estimated simultaneously, goodness of fit indices support factor structure equivalence (chi-square = 1062.89, df = 998, p-value = 0.075). After constraining all factors loadings (LX), chi-square = 1092.28, df = 1025, p-value = 0.071. The chi-square difference

Table 5.15: Results of Measurement Invariance for the Regulation Uncertainty Pair

	χ^2	df	p-value	RMSEA	NFI	CFI	$\Delta\chi^2$	Δdf	Critical Value
Independent group									
1.1. High Regulation Uncertainty	576.20	525	0.060	0.018	0.97	1.00			
1.2. Low Regulation Uncertainty	566.68	515	0.057	0.017	0.97	1.00			
Totally Free Model	1142.88	1040	0.014	0.017	0.97	1.00			
Factor Structure Equivalence*	1062.89	998	0.075	0.014	0.97	1.00			
Factor Loading Equivalence (LX)	1092.28	1025	0.071	0.014	0.97	1.00	29.39	27	χ^2 at 27 df = 40.113
Factor Covariance Equivalence	1140.21	1070	0.067	0.014	0.97	1.00	47.93	45	Not tested
Error Variance Equivalence	1541.98	1165	0.000	0.031	0.97	1.00	401.77	95	Not tested

*The model is the totally free model which has been fitted so that its chi-square significance is greater than 0.05.

between the factor structure equivalence model and the factor loading equivalence model is 29.39 (1092.28 – 1062.89), which is lower than the critical chi-square value with 27 degrees of freedom (40.113). Thus, constraining factor loadings does not significantly worsen the model fit. Metric invariance of the paired regulation uncertainty groups is confirmed.

The measurement invariance test of the market uncertainty pair and the regulation uncertainty pair supports that the high (versus low) market uncertainty group and the high (versus low) regulation uncertainty group interpret and understand the measurement scales in the same fashion. Consequently, it is appropriate to compare the hypothesized relationships in the structural model.

5.6. Structural Model and Hypothesis Testing

This section reports the test results from three proposed models and hypotheses, beginning with (1) the direct effect model, followed by (2) the moderating effect model, and (3) the simultaneous effect model.

5.6.1. The Direct Effect Model

The direct effect model tests the direct effect of two sets of antecedents of corporate environmentalism: the external factors and the internal factors. Also, it tests three consequences of corporate environmentalism: marketing performance, social performance, and environmental performance.

Goodness of fit indices support that the hypothesized direct effect model fits the data (Table 5.16). Although p-value of chi-square does not indicate a model fit (p-value = 0.000), other goodness of fit indices support a reasonably fit model: RMSEA, 0.019, is close to zero; NFI is almost one (0.99); and CFI is exactly one (1.00).

Hypothesis 1 proposes that perceived uncertainty of environmental market is negatively related to corporate environmentalism. The coefficient of the relationship between perceived market uncertainty and corporate environmentalism is significantly negative (β_{MktUn} = -0.05, p-value < 0.05). Thus, Hypothesis 1 is confirmed. Note that the size of coefficient is quite small (-0.05).

Hypothesis 2 asserts that perceived uncertainty of environmental regulation is negatively related to corporate environmentalism. Results do not support Hypothesis 2. The coefficient estimate of the relationship between perceived regulation uncertainty and corporate environmentalism is not significant (β_{RegUn} = 0.04, p-value < 0.05).

Table 5.16: Results of the Direct Effect Model

	Beta Coefficient	**Standard Error**	**t-value**
Antecedents			
External Factors			
• MktUn ➔ CE	-0.05*	0.03	-2.03
• RegUn ➔ CE	0.04	0.03	1.46
Internal Factors			
• Reltn ➔ CE	0.00	0.03	-0.13
• ShVsn ➔ CE	0.29*	0.04	7.95
• TchCp ➔ CE	0.67*	0.04	15.83
Consequences			
• CE ➔ MktPrf	0.28*	0.04	6.86
• CE ➔ SocPrf	0.41*	0.04	9.98
• CE ➔ EnvPrf	0.39*	0.04	8.78

Goodness of Fit Indices: Chi-square = 623.87, df = 491, p-value = 0.000, RMSEA = 0.019, NFI = 0.99, CFI = 1.00, * p-value < 0.05

Hypotheses 3, 4, and 5 test that three internal factors, namely relationship with external organizations, shared vision, and technological capability, positively affect corporate environmentalism. Results support Hypothesis 4: a positive influence of shared vision on corporate environmentalism (β_{ShVsn} = 0.29, p-value < 0.05), and Hypothesis 5: a positive influence of technological capability (β_{TchCp} = 0.67, p-value < 0.05). Results do not support Hypothesis 3 (β_{Reltn} = 0.00, p-value > 0.05): a positive influence of relationship with external organizations is not confirmed.

Hypotheses 6, 7, and 8 respectively propose that marketing, social, and environmental performance outcomes are the consequences of corporate environmentalism. The three hypotheses are confirmed. Corporate environmentalism positively affects marketing performance (β_{MktPrf} = 0.28, p-value < 0.05), social performance (β_{SocPrf} = 0.41, p-value < 0.05), and environmental performance (β_{EnvPrf} = 0.39, p-value < 0.05).

Table 5.17 reports the explained variances or R-Squares of endogenous variables estimated in the direct effect model. Some 81% of variance in corporate environmentalism is explained by the five exogenous variables: the two perceived uncertainties and three internal factors of firms. In turn, corporate environmentalism explains 9% of variance in marketing performance, 18% in social performance, and 12% in environmental performance.

Table 5.17 reports indirect effects of five antecedents of corporate environmentalism on the consequences of corporate environmentalism. Perceived market uncertainty, through corporate environmentalism, has a significant negative influence on social performance (β_{SocPrf} = -0.02, p-value < 0.05) and environmental performance (β_{EnvPrf} = -0.02, p-value < 0.05) but the indirect effect of perceived market uncertainty on marketing performance is almost statistically significant (β_{MktPrf} = -0.01, p-value > 0.05, t-value = -1.95). Note that the coefficients are very small, close to zero. The indirect effects of perceived regulation uncertainty on the three performances is not found; the coefficients are not statistically significant (β_{MktPrf} = 0.01, p-value > 0.05, β_{SocPrf} = 0.02, p-value > 0.05, and β_{EnvPrf} = 0.01, p-value > 0.05, respectively). The indirect effect of the relationship with external organizations on the three performances are not found (β_{MktPrf} = 0.00, p-value > 0.05, β_{SocPrf} = 0.00, p-value > 0.05, and β_{EnvPrf} = 0.00, p-value > 0.05). However, the indirect effects of shared vision and technological capability on the performances are evident. Shared vision has an indirect effect on marketing performance (β_{MktPrf} = 0.08, p-value < 0.05), social performance (β_{SocPrf} = 0.12, p-value < 0.05), and environmental performance (β_{EnvPrf} = 0.11, p-value < 0.05). Technological capability also has an indirect effect on

marketing performance (β_{MktPrf} = 0.19, p-value < 0.05), social performance (β_{SocPrf} = 0.28, p-value < 0.05), and environmental performance (β_{EnvPrf} = 0.26, p-value < 0.05).

Table 5.17: Explained Variances and Indirect Effects

Antecedents	MktPrf			SocPrf			EnvPrf			CE
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
MktUn	-0.01	0.01	-1.95	-0.02*	0.01	-1.99	-0.02*	0.01	-1.98	
RegUn	0.01	0.01	1.43	0.02	0.01	1.45	0.01	0.01	1.44	
Reltn	0.00	0.01	-0.13	0.00	0.01	-0.13	0.00	0.01	-0.13	
ShVsn	0.08*	0.02	5.25	0.12*	0.02	6.31	0.11*	0.02	6.02	
TchCp	0.19*	0.03	6.40	0.28*	0.03	8.68	0.26*	0.03	7.96	
R^2	0.09			0.18			0.12			0.81

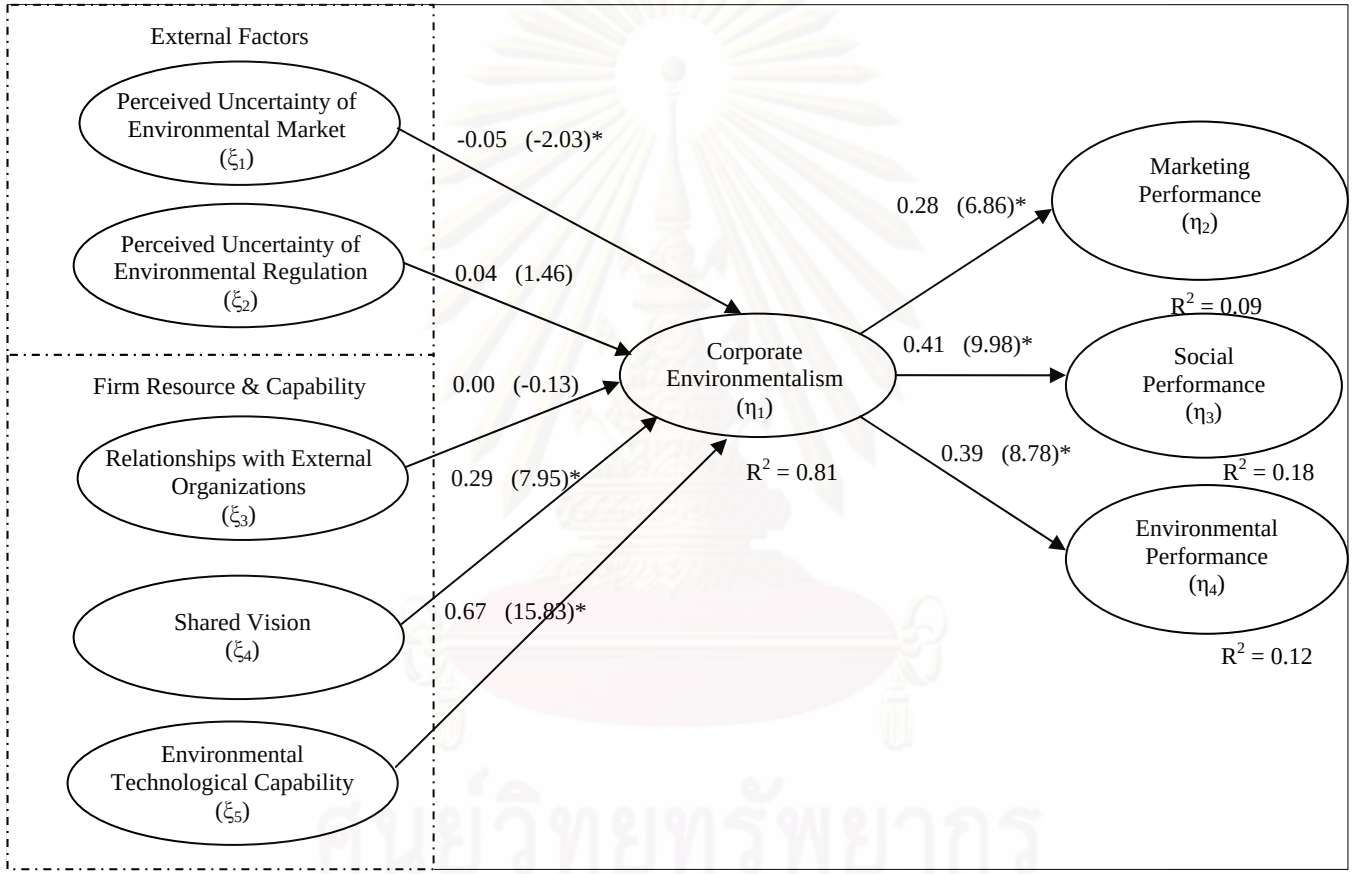
* p-value < 0.05

Table 5.18 summarizes the results of hypothesis testing in the direct effect model. The negative effect of perceived market uncertainty (Hypothesis 1) and the positive effect of shared vision (Hypothesis 4) and technological capability (Hypothesis 5) on corporate environmentalism are supported. The positive influence of corporate environmentalism on marketing performance (Hypothesis 6), social performance (Hypothesis 7), and environmental performance (Hypothesis 8) are supported. The negative effect of perceived regulation uncertainty (Hypothesis 2) and the positive effect of relationship with external organizations are not supported. Five antecedent variables explain a large portion of variance in corporate environmentalism (81%) whereas corporate environmentalism explains relatively a small portion of variance in marketing, social, and environmentalism performance (9%, 18% and 12% respectively). Figure 5.3 graphically illustrates the results.

Table 5.18: Summary of Hypothesis Testing Results of the Direct Effect Model

Hypotheses	Results
H1: The negative effect of market uncertainty (-)	supported
H2: The negative effect of regulation uncertainty (-)	not supported
H3: The positive effect of relationship with external organizations (+)	not supported
H4: The positive effect of shared vision (+)	supported
H5: The positive effect of Technological capability (+)	supported
H6: The positive effect of corporate environmentalism on marketing performance (+)	supported
H7: The positive effect of corporate environmentalism social performance (+)	supported
H8: The positive effect of corporate environmentalism environmental performance (+)	supported

Figure 5.3: Results of the Direct Effect Model



Goodness of Fit Indices: Chi-square = 623.87, df = 491, p-value = 0.000, RMSEA = 0.019, NFI = 0.99, CFI = 1.00
Note: number represents beta coefficient and t-value (in parentheses), * p-value < 0.05

5.6.2. The Moderating Effect Model

The focal interest of the moderating effect model is on the moderating effect of perceived uncertainty of environmental market and environment regulation on the relationships between three internal factors and corporate environmentalism. Following multiple group analysis with structural equation modeling as suggested by Hair et al. (2006), the moderating effect of the two is tested by constraining the relationship coefficient of the interest for firms with a "high" perceived market uncertainty, for example, to be equal to that for firms with a "low" perceived market uncertainty. Then, the resulting chi-square estimate is compared with the chi-square estimate of the model in which the coefficient is not constrained. If the chi-square change is significantly different, it can be concluded that the perceived market uncertainty moderates the association. Two external factors are hypothesized to have a moderating effect: the perceived market uncertainty (Hypotheses 3a, 4a, and 5a) and perceived regulation uncertainty (Hypotheses 3b, 4b, and 5b). Hypotheses pertaining to the positive effect of internal factors and the performance outcomes are first examined. Then, hypotheses related to the moderating effect of perceived market uncertainty and the perceived regulation uncertainty are examined.

Table 5.19 shows the results of four independent models when the sample is split: the high (versus low) perceived market uncertainty group and the high (versus low) perceived regulation uncertainty group. Only internal factors: relationship with external organizations, shared vision, and technological capability, are included in the models as the antecedents of corporate environmentalism.

Beginning with the analysis of model fit, the chi-square p-value of all four models suggests a model fit, except that of the high market uncertainty group, which does not reach the 0.05 level. However, other goodness of fit indices are acceptable. RMSEA ranges from 0.019 to 0.024, very close to zero. All NFIs are 0.98 and all CFIs are exactly one. Thus, results indicate that all four independent models are fit models.

Table 5.19: Results of the Moderating Effect Model

	Perceived Market Uncertainty						Perceived Regulation Uncertainty					
	High Uncertainty (n = 356)			Low Uncertainty (n = 333)			High Uncertainty (n = 318)			Low Uncertainty (n = 358)		
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value
Antecedents												
Internal Factors												
• Reltn ➔ CE	0.03	0.05	0.78	0.02	0.06	0.36	-0.04	0.05	-1.10	0.06	0.04	1.60
• ShVsn ➔ CE	0.23*	0.06	4.06	0.33*	0.06	5.75	0.25*	0.06	4.46	0.27*	0.05	6.35
• TchCp ➔ CE	0.56*	0.09	9.33	0.62*	0.10	7.89	0.63*	0.09	9.67	0.53*	0.07	10.56
Consequents												
• CE ➔ MktPrf	0.23*	0.06	3.25	0.29*	0.07	4.60	0.19*	0.07	2.59	0.38*	0.06	5.64
• CE ➔ SocPrf	0.46*	0.06	6.57	0.39*	0.06	6.11	0.41*	0.06	5.98	0.44*	0.06	6.23
• CE ➔ EnvPrf	0.43*	0.06	5.35	0.43*	0.06	6.54	0.34*	0.06	4.81	0.52*	0.06	6.85
Fit Indices:												
Chi-square	355.48			344.58			363.57			337.96		
df	297			304			323			298		
p-value	0.011			0.054			0.059			0.055		
RMSEA	0.024			0.020			0.020			0.019		
NFI	0.98			0.98			0.98			0.98		
CFI	1.00			1.00			1.00			1.00		

Coefficient estimates illustrate the same pattern of significance across all four models. Coefficients of the effect of shared vision and technological capability on corporate environmentalism are statistically significant: $\beta_{ShVsn} = 0.23$ with p-value < 0.05 in the high market uncertainty group, $\beta_{ShVsn} = 0.33$ with p-value < 0.05 in the low market uncertainty group, $\beta_{ShVsn} = 0.25$ with p-value < 0.05 in the high regulation uncertainty group, and $\beta_{ShVsn} = 0.27$ with p-value < 0.05 in the low regulation uncertainty group. The coefficient of the effect of technological capability on corporate environmentalism in the high market uncertainty group is 0.56, p-value < 0.05: in the low market uncertainty group, $\beta_{TchCp} = 0.62$, p-value < 0.05; in the high regulation uncertainty group, $\beta_{TchCp} = 0.63$, p-value < 0.05; and in the low regulation uncertainty group, $\beta_{TchCp} = 0.53$, p-value < 0.05. The significant positive coefficient estimates of shared vision and technological capability further confirm Hypotheses 4 and 5. However, the coefficients of relationship with external organizations are not significant across all four models. Consequently, Hypothesis 3 is still not confirmed.

Across four models, the coefficients of the effect of corporate environmentalism on marketing performance are between 0.19 and 0.38, p-value < 0.05; on social performance, between 0.39 and 0.46, p-value < 0.05; and on environmental performance, between 0.34 and 0.52, p-value < 0.05. The results lend further support to Hypotheses 6, 7, and 8.

Explained variance of corporate environmentalism, when only three internal factors are included in the models as antecedents, decreases to 57% in the high market uncertainty group and 78% in the low marketing uncertainty group (see Table 5.20). The explained variances of the three performances of corporate environmentalism are relatively small: for marketing performance, 7% in the high market uncertainty group and 6% in the low market uncertainty group; for social performance, 12% in both high and low market uncertainty groups; and for environmental performance, 7% in the high market uncertainty group and 14% in the low market uncertainty group.

Table 5.20: Explained Variances and Indirect Effects (The Market Uncertainty Pair)

Antecedents	**MktPrf**			**SocPrf**			**EnvPrf**			**CE**
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
Reltn	0.01/0.01	0.01/0.02	0.76/0.36	0.01/0.01	0.02/0.02	0.77/0.36	0.01/0.01	0.01/0.02	0.77/0.36	
ShVsn	0.05*/0.10*	0.02/0.03	2.53/3.66	0.10*/0.13*	0.03/0.03	3.49/4.28	0.08*/0.14*	0.02/0.03	3.28/4.46	
TchCp	0.17*/0.26*	0.06/0.06	3.06/4.07	0.33*/0.32*	0.06/0.06	5.52/4.98	0.26*/0.34*	0.05/0.07	4.78/5.27	
R^2	0.07/0.06			0.12/0.12			0.07/0.14			0.57/0.78

Note: Statistics on the left-hand side are estimates in the high market uncertainty group; on the right-hand side, the low market uncertainty group. *p-value < 0.05

Results of the two market uncertainty groups (the high and low groups) indicate that relationship with external organizations does not have an indirect effect on the three performance outcomes at all: the coefficient estimates are statistically insignificant in all models (β_{Reltn} = 0.01, p-value > 0.05 in all models) (Table 5.20). On the other hand, results suggest the indirect effect of shared vision and technological capability in both high and low market uncertainty groups: the coefficient estimate of the indirect effect of shared vision on marketing performance (β_{ShVsn}) = 0.05, p-value < 0.05 in the high market uncertainty group and β_{ShVsn} = 0.10, p-value < 0.05 in the low group; on social performance, β_{ShVsn} = 0.10, p-value < 0.05 in the high group and β_{ShVsn} = 0.13, p-value < 0.05 in the low group; and on environmental performance, β_{ShVsn} =

0.08, p-value < 0.05 in the high group and β_{ShVsn} = 0.14, p-value < 0.05 in the low group. The coefficient estimate of the indirect effect of technological capability on marketing performance (β_{TchCp}) = 0.17, p-value < 0.05 in the high market uncertainty group and β_{TchCp} = 0.26, p-value < 0.05 in the low group; on social performance, β_{TchCp} = 0.33, p-value < 0.05 in the high group and β_{TchCp} = 0.32, p-value < 0.05 in the low group; and on environmental performance, β_{TchCP} = 0.26, p-value < 0.05 in the high group and β_{TchCp} = 0.34, p-value < 0.05 in the low group.

In the high and low regulation uncertainty groups, 64% and 60% of the variance in corporate environmentalism respectively are explained by the three antecedent variables (see Table 5.21). 5% and 6% of variance in marketing performance are explained by corporate environmentalism in the high and low regulation uncertainty groups respectively; 15% and 10% of variance in social performance; and 7% of variance in environmental performance in both groups.

Table 5.21: Explained Variances and Indirect Effects (The Regulation Uncertainty Pair)

Antecedents	**MktPrf**			**SocPrf**			**EnvPrf**			**CE**
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
Reltn	-0.01/0.02	0.01/0.02	-1.01/1.55	-0.02/0.02	0.02/0.02	-1.08/1.55	-0.02/0.03	0.02/0.02	-1.07/1.56	
ShVsn	0.05*/0.11*	0.02/0.03	2.24/4.31	0.10*/0.12*	0.03/0.03	3.60/4.51	0.08*/0.13*	0.03/0.03	3.31/4.79	
TchCp	0.16*/0.28*	0.06/0.05	2.50/5.12	0.33*/0.29*	0.06/0.05	5.16/5.48	0.27*/0.31*	0.06/0.05	4.40/6.01	
R^2	0.05/0.06			0.15/0.10			0.07/0.07			0.64/0.60

Note: Statistics on the left-hand side are estimates in the high regulation uncertainty group; on the right-hand side, the low regulation uncertainty group. *p-value < 0.05

The statistical significance of indirect effects of the three antecedent variables on marketing, social, and environmental performance in the regulation uncertainty pair reveals the same pattern found in the market uncertainty pair. The indirect effect coefficients of relationship with external organizations on all performance outcomes are not significant: the coefficient magnitude ranges from -0.02 to 0.03, all p-values > 0.05. The coefficients of indirect effect of shared vision on marketing performance in the high and low regulation uncertainty groups are statistically significant, 0.05 and 0.11, p-value < 0.05 respectively; on social performance, 0.10 and 0.12, p-value < 0.05; and

on environmental performance, 0.08 and 0.13, p-value < 0.05. The coefficients of indirect effect of technological capability on marketing performance in the high and low regulation uncertainty groups are also statistically significant, 0.16 and 0.28, p-value < 0.05 respectively; on social performance, 0.33 and 0.29, p-value < 0.05; and on environmental performance, 0.27 and 0.31, p-value < 0.05.

5.6.2.1. The Market Uncertainty Pair

Now, the moderating effect of perceived market uncertainty is examined. Hypothesis 3a proposes that the positive influence of relationship with external organizations on corporate environmentalism is moderated by perceived market uncertainty. To test the hypothesis, the low market uncertainty group is estimated against the high market uncertainty group without any constrained coefficient (this is called the totally free model in Table 5.22). The resulting chi-square of the totally free model is 700.06 with 601 degrees of freedom. Then, coefficients of the association between relationship with external organizations and corporate environmentalism between the high and low market uncertainty groups are equated, resulting in chi-square = 700.13 with 602 degrees of freedom (see Approach 1 in Table 5.22). By constraining the coefficients of the relationship in the high and low perceived market uncertainty groups, chi-square worsens by only 0.07 (700.13 – 700.06) with 1 degree of freedom, much lower than 3.84, the critical chi-square value with 1 degree of freedom. Thus, H3a, the moderating effect of perceived market uncertainty on the relationship between relationship with external organization and corporate environmentalism is not supported.

The same procedure is performed to test Hypotheses 4a and 5a. Hypothesis 4a asserts the moderating effect of perceived market uncertainty on the association between shared vision and corporate environmentalism and Hypothesis 5a asserts the moderating effect on the association between technological capability and corporate environmentalism. Neither Hypothesis 4a nor 5a is confirmed. Chi-square difference when the relationship coefficient of shared vision is constrained as compared to the chi-square of the totally free model increases by 0.73 (700.79 – 700.06). The chi-square

difference in the case of technological capability is 0.00 (700.06 – 700.06): chi-square does not change at all. Both chi-squares are lower than 3.84, the critical chi-square value with 1 degree of freedom.

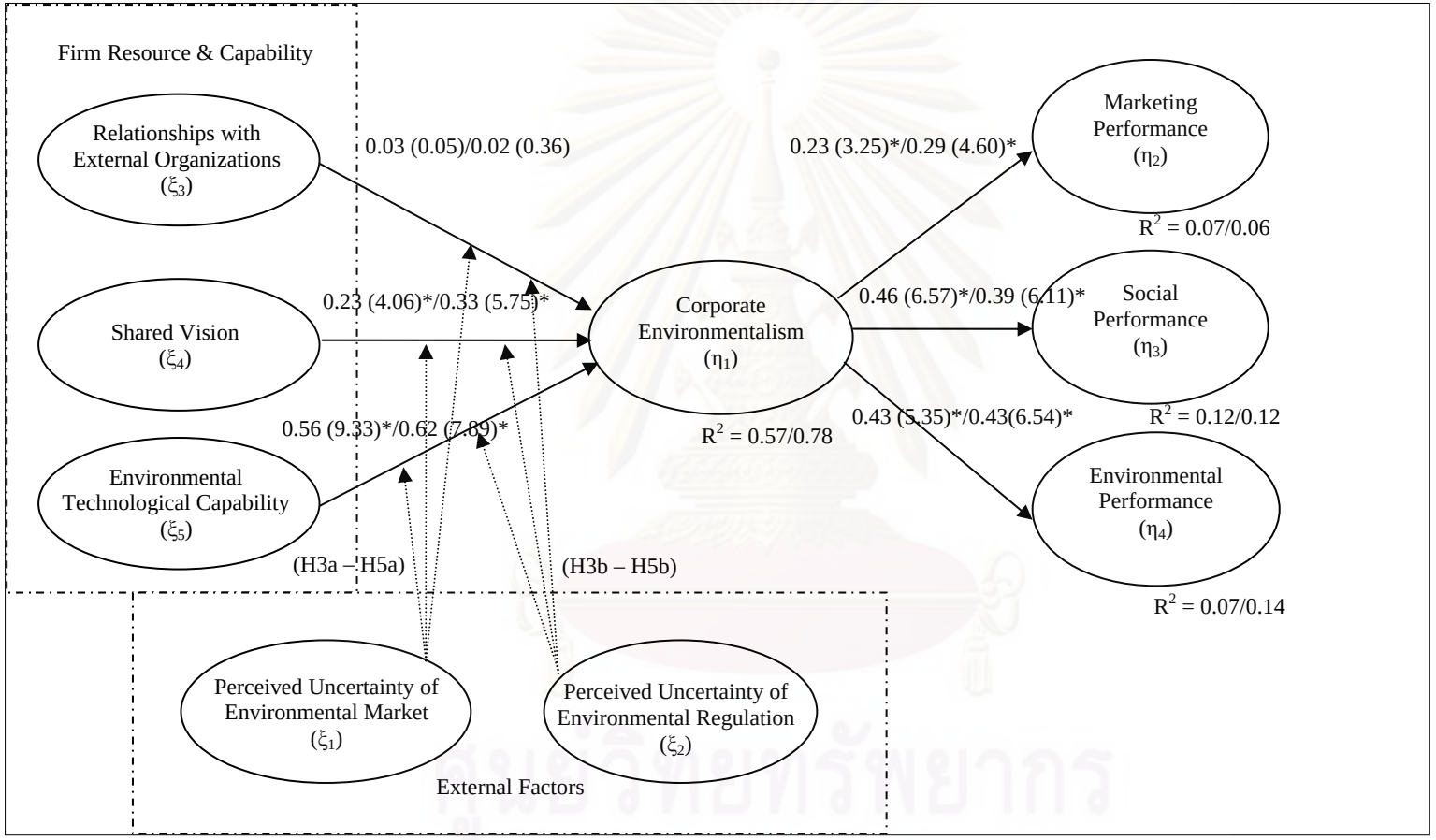
Table 5.22: Results for Multiple Group Analysis of the Market Uncertainty Pair

	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High Market Uncertainty	355.48	297	0.011	0.024		
1.2. Low Market Uncertainty	344.58	304	0.054	0.020		
Totally Free Model	700.06	601	0.0034	0.022		
(Approach 1: Free ➔ Fixed)						
Constrained Relationships:						
H3a: Retln ➔ CE	700.13	602	0.0034	0.022	0.07	1
H4a: ShVsn ➔ CE	700.79	602	0.0032	0.022	0.73	1
H5a: TchCp ➔ CE	700.06	602	0.0034	0.022	0.00	1
CE ➔ MktPrf	700.94	602	0.0032	0.022	0.88	1
CE ➔ SocPrf	700.11	602	0.0034	0.022	0.05	1
CE ➔ EnvPrf	700.21	602	0.0031	0.022	0.15	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	704.00	607	0.0038	0.022		
H3a: Retln ➔ CE	703.96	606	0.0035	0.022	-0.04	1
H4a: ShVsn ➔ CE	702.74	606	0.0039	0.022	-1.26	1
H5a: TchCp ➔ CE	703.52	606	0.0037	0.022	-0.48	1
CE ➔ MktPrf	703.34	606	0.0037	0.022	-0.66	1
CE ➔ SocPrf	703.09	606	0.0038	0.022	-0.91	1
CE ➔ EnvPrf	702.36	606	0.0040	0.022	-1.64	1

Note: Critical chi-square value with 1 degree of freedom = 3.84

In addition to constraining the coefficients of the relationships between the three antecedents and corporate environmentalism, coefficients of corporate environmentalism and three consequences of corporate environmentalism in the high and low groups are equated one at a time, chi-square of the estimated models does not differ from the chi-square of the totally free model. They range from 0.05 to 0.88, lower than 3.84. Thus, evidence supporting the moderating effect of perceived market uncertainty is not found. Figure 5.4 illustrates the totally free model of the perceived market uncertainty groups.

Figure 5.4: Results of the Moderating Effect Model (Totally Free Model): The Market Uncertainty Pair (High/Low Groups)



Global Goodness of Fit Indices (Totally Free Model): Chi-square = 700.06, df = 601, p-value = 0.0034, RMSEA = 0.022, NFI = 0.98, CFI = 1.00

Note: number represents beta coefficient and t-value (in parentheses) of the high market uncertainty group and the low market uncertainty group respectively, * p-value < 0.05

Nonglak Wiratchai (1999) contended that a different sequence of constraining coefficients possibly resulted in different results. In the above explained approach (Approach 1), coefficients of the relationships (in GA and BE matrixes) are completely freed, then, each tested relationship is constrained one at a time. According to Nonglak Wiratchai's (1999) contention, it is sensible that different results are probably found if coefficients of the relationships in (GA and BE matrixes) are first constrained, then, each is freed one at a time. Consequently, results of this approach (Approach 2) are presented in Table 5.22. When all relationships in GA and BE matrixes of the high and low market uncertainty groups are equated (or constrained), the chi-square is 704.00, df = 607, p-value = 0.0038. After freeing the coefficient of the association between relationship with external organizations and corporate environmentalism, the chi-square reduces to 703.96, df = 606, p-value = 0.0035. It is reduced by 0.04 (704.00 – 703.96). Coefficients of the other relationship are freed one by one. The decrease in chi-square is 1.26 when the coefficient of the effect of shared vision on corporate environmentalism is freed; and 0.48 when the coefficient of the effect of technological capability on corporate environmentalism is freed. By using Approach 2, evidence supporting H3a, H4a, and H5a is not found. Likewise, evidence supporting the moderating effect of perceived market uncertainty on the positive influence of corporate environmentalism on three performance outcomes is not found either. Thus, it can be concluded that the moderating effect of perceived market uncertainty is not found in the moderating effect model.

5.6.2.2. The Regulation Uncertainty Pair

Next, Hypotheses 3b, 4b, and 5b are examined. Hypotheses 3b, 4b, and 5b propose the moderating effect of perceived regulation uncertainty on the relationships between three internal factors and corporate environmentalism. Following the same procedure in analyzing the moderating effect of perceived market uncertainty, Hypothesis 3b is confirmed but hypotheses 4b and 5b are not confirmed. When the coefficient of the effect of relationship with external organization is constrained, chi-square is changed by 3.96 (701.53 – 705.49, in Table 5.23), using Approach 1 and by 4.18 (711.66 – 707.48), using Approach 2. In addition, the significance of chi-square

of the totally free model is greater than 0.05 but the significance of chi-square of the model with the coefficient of the effect of relationship with external organizations constrained is lower than 0.05. Thus, it lends support to Hypothesis 3b. However, note that the effect coefficient of relationship with external organizations on corporate environmentalism in the high regulation uncertainty group is insignificantly negative (β_{Retln} = -0.04, p-value = -1.10) but the coefficient in the low regulation uncertainty group is insignificantly positive (β_{Retln} = 0.06, p-value = 1.60) (Table 5.19). The evidence suggests that perceived regulation uncertainty alters the direction of the effect of relationship with external organizations on corporate environmentalism. When regulation is perceived as less uncertain, relationship with external organizations simulates corporate environmentalism. On the contrary, when regulation is perceived as highly uncertain, relationship with external organizations discourages corporate environmentalism. Note again that the effect of relationship with external organizations itself does not have a significant influence on corporate environmentalism in all groups.

Table 5.23: Results of Multiple Group Analysis for the Regulation Uncertainty Pair

	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High Regulation Uncertainty	363.57	323	0.059	0.020		
1.2. Low Regulation Uncertainty	337.96	298	0.055	0.019		
Totally Free Model	701.53	621	0.135	0.020		
(Approach 1: Free ➔ Fixed)						
Constrained Relationships:						
H3b: Retln ➔ CE	705.49	622	0.011	0.020	**3.96**	1
H4b: ShVsn ➔ CE	701.49	622	0.014	0.020	-0.04	1
H5b: TchCp ➔ CE	702.09	622	0.014	0.020	0.56	1
CE ➔ MktPrf	704.68	622	0.012	0.020	3.15	1
CE ➔ SocPrf	701.58	622	0.014	0.020	0.05	1
CE ➔ EnvPrf	702.99	622	0.013	0.020	1.46	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	711.66	627	0.010	0.020		
H3b: Retln ➔ CE	707.48	626	0.013	0.020	**-4.18**	1
H4b: ShVsn ➔ CE	710.16	626	0.011	0.020	-1.50	1
H5b: TchCp ➔ CE	711.42	626	0.010	0.020	-0.24	1
CE ➔ MktPrf	708.89	626	0.012	0.020	-2.77	1
CE ➔ SocPrf	710.26	626	0.011	0.020	-1.40	1
CE ➔ EnvPrf	710.11	626	0.011	0.020	-1.55	1

Note: Chi-square critical value with 1 degree of freedom = 3.84

When the effect coefficients of share vision and technological capability in the high and low groups are constrained, chi-square estimates change by 0.04 (701.53 – 701.49) and 0.56 (701.53 – 702.09) respectively when using Approach 1. Using Approach 2, chi-square estimates change by 1.50 (711.66 – 711.66) in the case of shared vision and by 0.24 (711.66 – 711.42) in the case of technological capability. The changes in chi-square are lower than 3.84, the critical chi-square value. Thus, Hypotheses 4b and 5b are not supported. Figure 5.5 shows the totally free model for the regulation uncertainty pair.

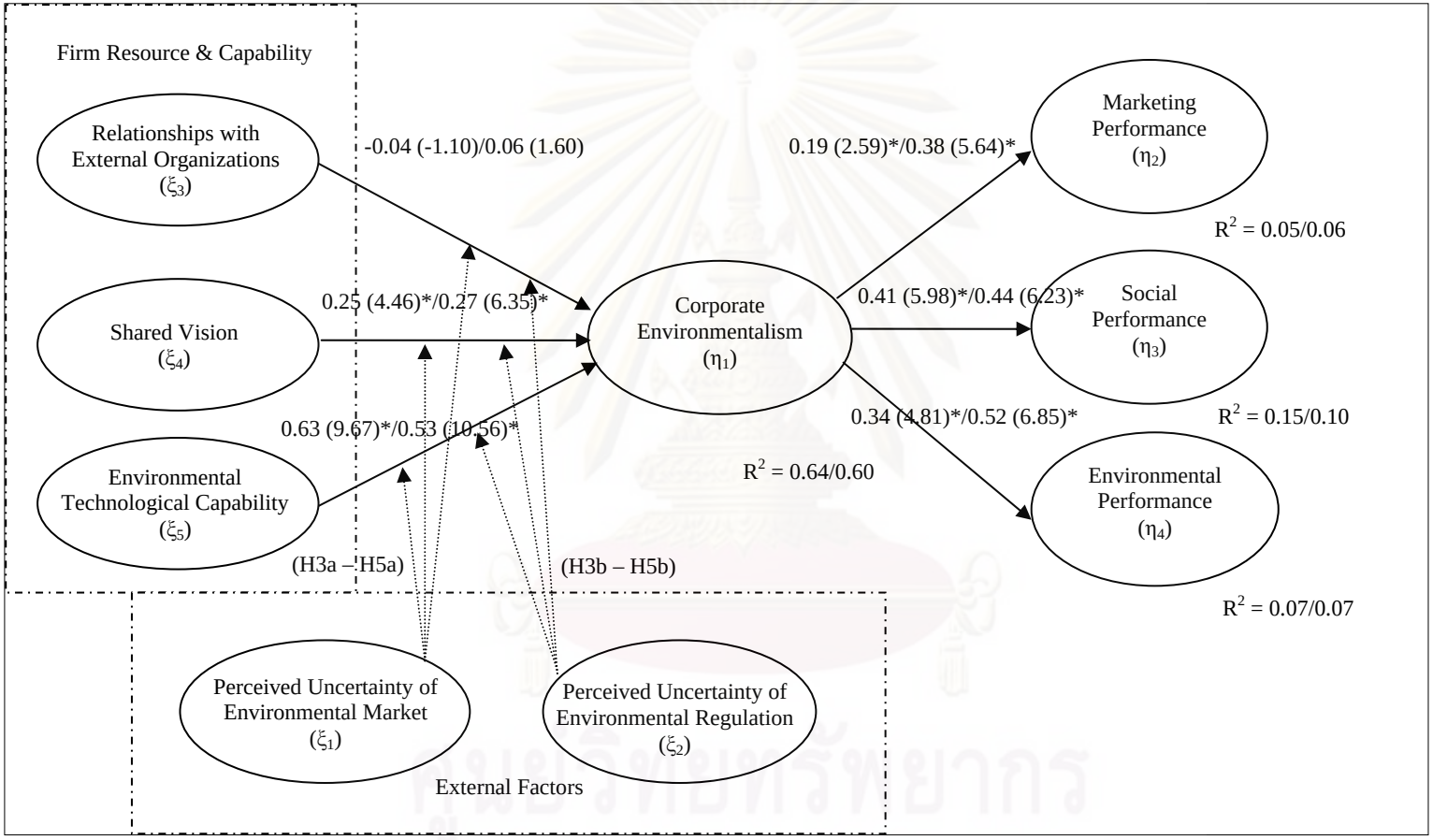
In summary, this section examines hypotheses in the moderating effect model. The positive effects of shared vision and technological capability on corporate environmentalism, Hypotheses 4 and 5, are further confirmed. The positive influence of corporate environmentalism on marketing, social, and environmental performance, Hypotheses 6, 7, and 8, is also supported in this moderating effect model. However, among all the moderated hypotheses, H3a – H5a and H3b – H5b, only Hypothesis 3b is supported, the rest of the moderated hypotheses are not supported. Evidence exclusively suggests the moderating effect of the perceived regulation uncertainty on the coefficient of relationship with external organizations on corporate environmentalism. Table 5.24 summarizes results of hypothesis testing in the moderating effect model.

Table 5.24: Summary of Hypothesis Testing Results of the Moderating Effect Model

Hypotheses	Market Uncertainty	Regulation Uncertainty
H3: Relationship with external organizations on CE (+)	not supported	not supported
H3a: moderated by market uncertainty	not supported	n/a
H3b: moderated by regulation uncertainty	n/a	supported
H4: Shared vision (+)	supported	supported
H4a: moderated by market uncertainty	not supported	n/a
H4b: moderated by regulation uncertainty	n/a	not supported
H5: Technological capability (+)	supported	supported
H5a: moderated by market uncertainty	not supported	n/a
H5b: moderated by regulation uncertainty	n/a	not supported
H6: Marketing performance (+)	supported	supported
H7: Social performance (+)	supported	supported
H8: Environmental performance (+)	supported	supported

n/a = not applicable

Figure 5.5: Results of the Moderating Effect Model (Totally Free Model): The Regulation Uncertainty Pair (High/Low Groups)



Goodness of Fit Indices (Totally Free Model): Chi-square = 701.53, df = 621, p-value = 0.0135, RMSEA = 0.020, NFI = 0.98, CFI = 1.00

Note: number represents beta coefficient and t-value (in parentheses) of the high/low regulation uncertainty groups, * p-value < 0.05

5.6.3. The Simultaneous Effect Model

The direct effect model and the moderating effect model separately investigate the direct effect and the moderating effect of perceived market uncertainty and perceived regulation uncertainty. In this subsection, both types of effect are examined at the same time in the simultaneous effect model.

Estimates of chi-square goodness of fit of all four models in Table 5.25 do not support a model fit (all chi-square p-values < 0.05); however, other goodness of fit indices support a reasonably fit model for all groups. RMSEAs are between 0.028-0.037. NFI and CFI statistics range from 0.95 to 0.99. Thus, the models reasonably fit the data.

Hypotheses 1 and 2 propose that the external factors, perceived market uncertainty and perceived regulation uncertainty respectively, adversely affect corporate environmentalism. Results of the simultaneous effect model do not support the two hypotheses. Coefficient estimates of the two uncertainties are not significant across four data groups. The coefficients of perceived market uncertainty in the high and low market uncertainty groups and the high and low regulation uncertainty groups are β_{MktUn} = 0.05, p-value > 0.05; β_{MktUn} = -0.06, p-value > 0.05; β_{MktUn} = -0.05, p-value > 0.05; β_{MktUn} = -0.02, p-value > 0.05, respectively. The coefficients of perceived regulation uncertainty in the high and low market uncertainty groups and the high and low regulation uncertainty groups are β_{RegUn} = 0.01, p-value > 0.05; β_{RegUn} = 0.03, p-value > 0.05; β_{RegUn} = 0.04, p-value > 0.05; β_{RegUn} = -0.02, p-value > 0.05. Thus, the evidence does not support the direct effect of both perceived uncertainties in the simultaneous effect model.

The coefficient estimates of the effect of relationship with external organizations are not significant (β_{Reltn} = 0.02, 0.04, -0.06, and 0.05, all p-values > 0.05). Hence, Hypothesis 3 is not supported.

Table 5.25: Results of the Simultaneous Effect Model

	Perceived Market Uncertainty						**Perceived Regulation Uncertainty**					
	High Uncertainty (n = 356)			Low Uncertainty (n = 333)			High Uncertainty (n = 316)			Low Uncertainty (n = 358)		
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value
Antecedents												
External Factors												
• MktUn ➔ CE	0.05	0.04	1.33	-0.06	0.05	-1.39	-0.05	0.04	-1.23	-0.02	0.05	-0.47
• RegUn ➔CE	0.01	0.04	0.41	0.03	0.04	0.75	0.04	0.05	0.78	-0.02	0.06	-0.38
Internal Factors												
• Reltn ➔ CE	0.02	0.04	0.43	0.04	0.05	0.74	-0.06	0.05	-1.37	0.05	0.05	1.08
• ShVsn ➔ CE	0.21*	0.05	4.04	0.32*	0.05	5.89	0.25*	0.06	4.16	0.30*	0.05	6.19
• TchCp ➔ CE	0.64*	0.06	11.35	0.61*	0.07	9.16	0.66*	0.07	10.09	0.64*	0.06	11.03
Consequences												
• CE ➔ MktPrf	0.28*	0.05	5.14	0.27*	0.06	4.76	0.22*	0.06	3.74	0.37*	0.06	6.66
• CE ➔ SocPrf	0.38*	0.06	6.67	0.37*	0.06	6.25	0.39*	0.06	6.77	0.41*	0.06	7.27
• CE ➔ EnvPrf	0.27*	0.06	4.79	0.40*	0.06	6.34	0.29*	0.06	4.75	0.41*	0.06	6.91
Fit Indices:												
Chi-square	716.62			675.32			767.25			697.93		
df	534			537			535			538		
p-value	0.000			0.000			0.000			0.000		
RMSEA	0.031			0.028			0.037			0.029		
NFI	0.97			0.96			0.95			0.97		
CFI	0.99			0.99			0.98			0.99		

* p-value < 0.05

Hypotheses 4 and 5 are supported in the simultaneous effect model. The coefficient estimates of shared vision and technological capability are positively significant; β_{ShVsn} are between 0.21 and 0.32, and β_{TchCp} are between 0.61 and 0.66, all coefficients are statistically significant (p-value < 0.05). Results indicate the positive effect of shared vision and technological capability on corporate environmentalism across all groups.

Hypotheses 6, 7, and 8 propose a positive influence of corporate environmentalism on marketing, social, and environmental performance. The results from the simultaneous effect model show a similar pattern found in the direct effect and moderating effect models: β_{MktPrf} are between 0.22 and 0.37; β_{SocPrf} are between 0.37 and 0.41; and β_{EnvPrf} are between 0.27 and 0.41. All coefficients of performance outcomes are statistically significant (p-value < 0.05). Results of the simultaneous effect model further confirm Hypotheses 6, 7, and 8. Evidence supporting a positive

influence of corporate environmentalism on firms' three performance outcomes is found.

The explained variance of corporate environmentalism in both the high and low market uncertainty groups is equally 79% (Table 5.26). The explained variance of marketing performance in the high market uncertainty group is 7%, and 6% in the low market uncertainty group. The explained variance of social performance in the high market uncertainty group is 17%, and 12% in the low market uncertainty group. The explained variance of environmental performance in the high market uncertainty group is 9%, and 13% in the low market uncertainty group.

Table 5.26: Explained Variances and Indirect Effects (The Market Uncertainty Pair)

Antecedents	**MktPrf**			**SocPrf**			**EnvPrf**			**CE**
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
MktUn	0.01/-0.02	0.01/0.01	1.29/-1.34	0.02/-0.02	0.01/0.02	1.31/-1.36	0.01/-0.03	0.01/0.02	1.28/-1.36	
RegUn	0.00/0.01	0.01/0.01	0.41/0.74	0.01/0.01	0.01/0.02	0.41/0.75	0.00/0.01	0.01/0.02	0.41/0.75	
Reltn	0.00/0.01	0.01/0.01	0.43/0.73	0.01/0.01	0.02/0.02	0.43/0.73	0.00/0.01	0.01/0.02	0.43/0.73	
ShVsn	0.06*/0.09*	0.02/0.02	3.20/3.76	0.08*/0.12*	0.02/0.03	3.49/4.37	0.06*/0.13*	0.02/0.03	3.11/4.41	
TchCp	0.18*/0.17*	0.04/0.04	4.78/4.31	0.24*/0.23*	0.04/0.04	5.90/5.32	0.17*/0.24*	0.04/0.05	4.47/5.38	
R^2	0.07/0.06			0.17/0.12			0.09/0.13			0.79/0.79

Note: Statistics on the left-hand side are estimates in the high market uncertainty group; on the right-hand side, the low market uncertainty group. *p-value < 0.05.

All coefficient estimates of the indirect effect of perceived market uncertainty and perceived regulation uncertainty on marketing performance, social performance, and environmental performance are not statistically significant. The coefficient estimates of the indirect effect of relationship with external organizations are not statistically significant in the high and low market uncertainty groups, either. Like those in the moderating effect model, the coefficients of indirect effects of shared vision and technological capability on all three performance outcomes are statistically significant. The coefficients of indirect effect of shared vision range from 0.06 to 0.13, p-value < 0.05. The coefficients of indirect effect of technological capability range from 0.17 to 0.24, p-value < 0.05.

In the high and low regulation uncertainty groups, the explained variance of corporate environmentalism is 79% and 81%, respectively (Table 5.27). The explained variance of marketing performance is 5% in the high regulation uncertainty group, 10% in the low regulation uncertainty group; of social performance, 18% in the high regulation uncertainty group, 15% in the low regulation uncertainty group; and of environmental performance, 9% in the high regulation uncertainty group, and 14% in the low regulation uncertainty group.

Table 5.27: Explained Variances and Indirect Effects (The Regulation Uncertainty Pair)

Antecedents	**MktPrf**			**SocPrf**			**EnvPrf**			**CE**
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
MktUn	-0.01/-0.01	0.01/0.02	-1.17/-0.47	-0.02/-0.01	0.01/0.02	-1.21/-0.47	-0.01/-0.01	0.01/0.02	-1.19/-0.47	
RegUn	0.01/-0.01	0.01/0.02	0.77/-0.38	0.01/-0.01	0.02/0.03	0.78/-0.38	0.01/-0.01	0.01/0.03	0.77/-0.38	
Reltn	-0.01/0.02	0.01/0.02	-1.29/1.07	-0.02/0.02	0.02/0.02	-1.35/1.07	-0.02/0.02	0.01/0.02	-1.32/1.07	
ShVsn	0.05*/0.11*	0.02/0.02	2.80/4.63	0.10*/0.12*	0.03/0.03	3.58/4.80	0.07*/0.12*	0.02/0.03	3.16/4.69	
TchCp	0.14*/0.24*	0.04/0.04	3.54/5.90	0.26*/0.26*	0.04/0.04	5.79/6.27	0.19*/0.26*	0.04/0.04	4.37/6.03	
R^2	0.05/0.10			0.18/0.15			0.09/0.14			0.79/0.81

Note: Statistics on the left-hand side are estimates in the high regulation uncertainty group; on the right-hand side, the low regulation uncertainty group. *p-value < 0.05.

The coefficients of the indirect effect of perceived market uncertainty, perceived regulation uncertainty, and relationship with external organizations are not statistically significant: all p-values > 0.05. The coefficients of the indirect effect of shared vision and technological capability are statistically significant. The coefficient estimates of shared vision are between 0.05 and 0.12, p-values < 0.05. The coefficient estimates of technological capability fall between the range of 0.14 and 0.26, p-values < 0.05.

5.6.3.1. The Market Uncertainty Pair

Turning to the moderating effect of perceived market uncertainty, the chi-square differences when the associations between internal factors and corporate environmentalism are constrained, as shown in Table 5.28, do not support Hypotheses 3a, 4a, and 5a. The moderating effect of perceived market uncertainty on the relationships is not evidenced. All chi-square changes, using Approach 1 and 2 are

lower than 3.84, the critical chi-square value at 1 degree of freedom: in the case of the coefficient of the effect of relationship with external organizations, using Approach 1, chi-square change is 0.05 (1139.12 – 1139.07), using Approach 2, chi-square change is 0.29 (1146.71 – 1146.42); in the case of the coefficient of the effect of shared vision, using Approach 1, chi-square change is 1.46 (1140.58 – 1139.12), using Approach 2, chi-square change is 2.23 (1146.71 - 1144.48); in the case of the coefficient of the effect of technological capability, using Approach 1, chi-square change is 0.18 (1139.30 – 1139.12), using Approach 2, 0.11 (1146.71 – 1146.60). Thus, no evidence supports the moderating effect of perceived market uncertainty.

Furthermore, when the effect coefficients of corporate environmentalism on three performances between the two groups are constrained, using Approaches 1 and 2, chi-square changes do not support the moderating effect of perceived market uncertainty. Figure 5.6 graphically depicts the simultaneous effect model.

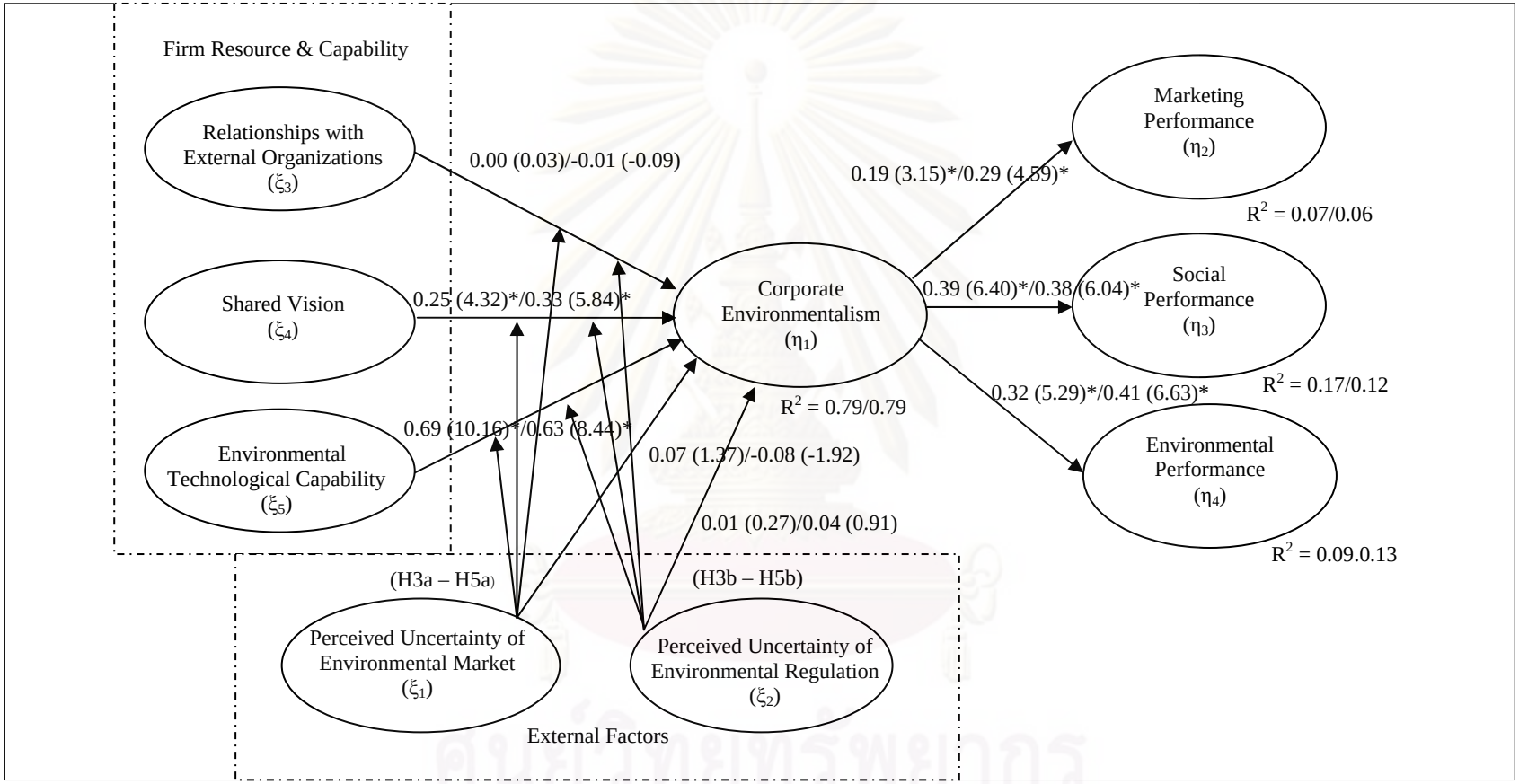
Table 5.28: Results of Multiple Group Analysis for the Market Uncertainty Pair

	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High Market Uncertainty	716.62	534	0.000	0.031		
1.2. Low Market Uncertainty	675.32	537	0.000	0.028		
Totally Free Model before fitting	1391.93	1071	0.000	0.030		
Totally Free Model after fitting *	1139.12	970	0.000	0.023		
(Approach 1: Free ➔ Fixed)						
Constrained Relationships:						
H3a: Retln ➔ CE	1139.07	971	0.000	0.023	-0.05	1
H4a: ShVsn ➔ CE	1140.58	971	0.000	0.023	1.46	1
H5a: TchCp ➔ CE	1139.30	971	0.000	0.023	0.18	1
CE ➔ MktPrf	1140.30	971	0.000	0.023	1.18	1
CE ➔ SocPrf	1139.12	971	0.000	0.022	0.00	1
CE ➔ EnvPrf	1140.21	971	0.000	0.023	1.09	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	1146.71	978	0.000	0.022		
H3a: Retln ➔ CE	1146.42	977	0.000	0.022	-0.29	1
H4a: ShVsn ➔ CE	1144.48	977	0.000	0.022	-2.23	1
H5a: TchCp ➔ CE	1146.60	977	0.000	0.022	-0.11	1
CE ➔ MktPrf	1145.78	977	0.000	0.022	-0.93	1
CE ➔ SocPrf	1146.19	977	0.000	0.022	-0.52	1
CE ➔ EnvPrf	1145.46	977	0.000	0.022	-1.25	1

Note: Critical chi-square value with 1 degree of freedom = 3.84

* The model is the totally free model which has been fitted.

Figure 5.6: Results of the Simultaneous Effect Model (Totally Free Model): The Market Uncertainty Pair (High/Low Groups)



Global Goodness of Fit Indices (Totally Free Model): Chi-square = 1139.12, df = 970, p-value = 0.00013, RMSEA = 0.023, NFI = 0.97, CFI = 0.99

Note: number represents beta coefficient and t-value (in parentheses) of high market uncertainty and low market uncertainty respectively, * p-value < 0.05

5.6.3.2. The Regulation Uncertainty Pair

Estimates in Table 5.29 suggest that perceived regulation uncertainty does not have a moderating effect on the relationships between shared vision and technological capability with corporate environmentalism. In the case when the effect coefficient of shared vision is constrained, using Approach 1, chi-square change is 0.25; using Approach 2, chi-square change is 0.91. In the case of technological capability, using Approach 1, chi-square change is 0.98; using Approach 2, chi-square change is 0.02. All the chi-square changes are lower than 3.84, the critical chi-square. Consequently, Hypotheses 4b and 5b are not supported.

However, evidence supports a moderating effect of perceived regulation uncertainty on the relationship between relationship with external organizations and corporate environmentalism: using Approach 1, chi-square change is 4.47; using Approach 2, chi-square change is 4.01. Thus, Hypothesis 3b is supported. The results are consistent with the analysis results in the moderating effect model; evidence suggests that perceived regulation uncertainty moderates this relationship but does not moderate the other two (shared vision and technological capability). Also, note that the influence of relationship with external organizations in the high perceived regulation uncertainty group is insignificantly negative whereas that of the low regulation uncertainty is insignificantly positive (Table 5.25).

When the coefficient of the influence of corporate environmentalism on marketing performance is constrained, using Approach 1, chi-square is statistically significantly changed (4.36 = 1315.12 – 1310.76), but using Approach 2, chi-square is not statistically significantly changed (3.55 = 1322.73 - 1319.18). Although, a 3.55 chi-square change is not statistically significant, it is very close to the 3.84 critical chi-square.

This evidence is in line with the results in Table 5.25. The coefficient of the positive influence of corporate environmentalism on marketing performance in the high regulation uncertainty group is 0.22, p-value < 0.05, whereas the coefficient in

the low regulation uncertainty group is 0.37, p-value < 0.05. Multiple group analysis supports that the influence of corporate environmentalism on marketing performance between the two groups is statistically different. Figure 5.7 graphically presents the simultaneous effect model.

Table 5.29: Results of Multiple Group Analysis for the Regulation Uncertainty Pair

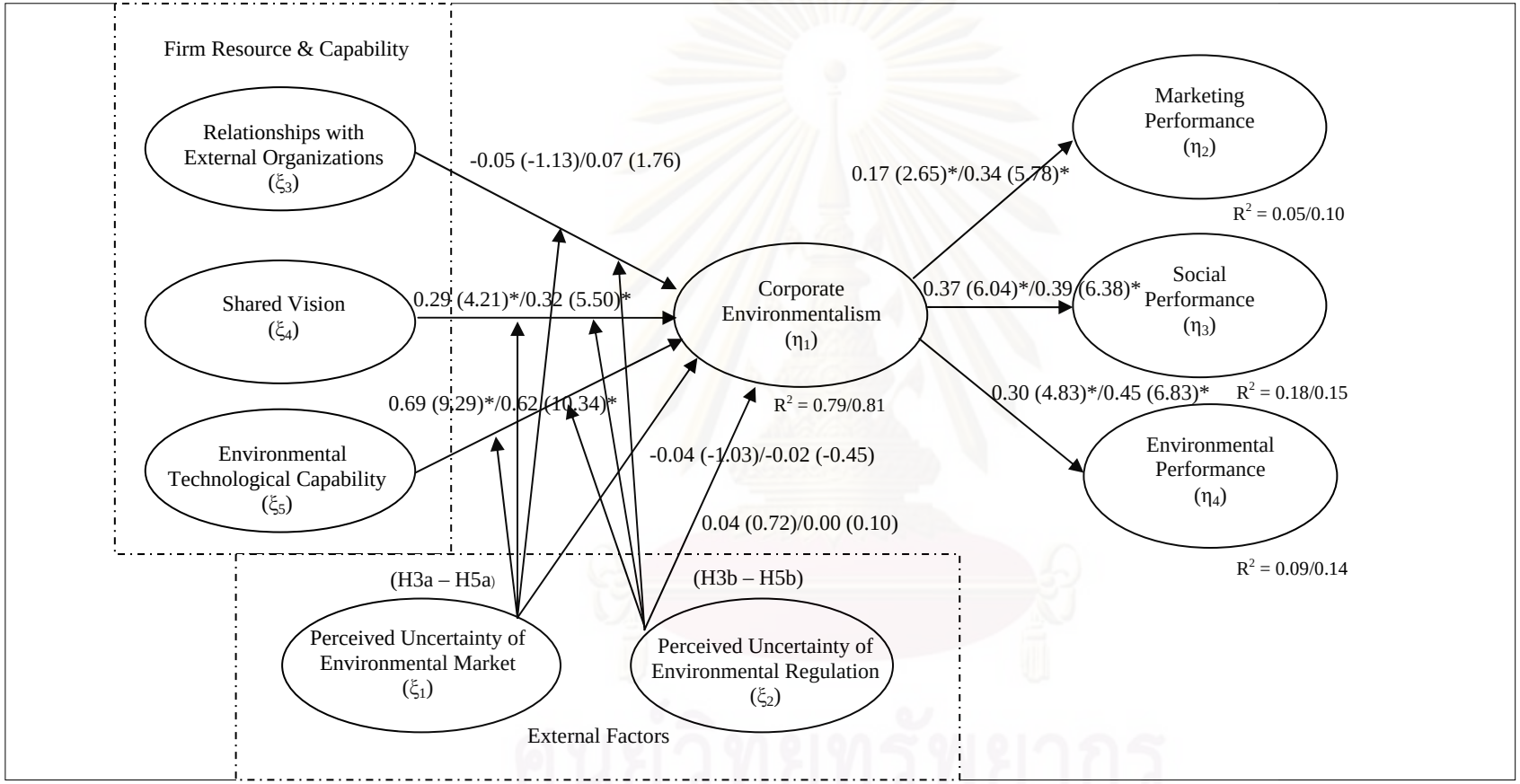
	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High Regulation Uncertainty	767.25	535	0.000	0.037		
1.2. Low Regulation Uncertainty	697.93	538	0.000	0.029		
Totally Free Model before fitting	1465.18	1073	0.000	0.033		
Totally Free Model after fitting *	1310.76	1018	0.000	0.029		
(Approach 1: Free ➔ Fixed)						
Constrained Relationships:						
H3b: Retln ➔ CE	1315.23	1019	0.000	0.029	**4.47**	1
H4b: ShVsn ➔ CE	1311.01	1019	0.000	0.029	0.25	1
H5b: TchCp ➔ CE	1311.74	1019	0.000	0.029	0.98	1
CE ➔ MktPrf	1315.12	1019	0.000	0.029	**4.36**	1
CE ➔ SocPrf	1310.77	1019	0.000	0.029	0.01	1
CE ➔ EnvPrf	1312.52	1019	0.000	0.029	1.76	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	1322.73	1026	0.000	0.029		
H3b: Retln ➔ CE	1318.72	1025	0.000	0.029	**-4.01**	1
H4b: ShVsn ➔ CE	1321.82	1025	0.000	0.029	-0.91	1
H5b: TchCp ➔ CE	1322.71	1025	0.000	0.029	-0.02	1
CE ➔ MktPrf	1319.18	1025	0.000	0.029	-3.55	1
CE ➔ SocPrf	1321.61	1025	0.000	0.029	-1.12	1
CE ➔ EnvPrf	1321.22	1025	0.000	0.029	-1.51	1

Note: Critical chi-square value with 1 degree of freedom = 3.84

* The model is the totally free model which has been fitted.

Overall, evidence does not support the moderating effect of perceived market uncertainty but it indicates that perceived regulation uncertainty moderates the effect of relationship with external organizations on corporate environmentalism. In the case that firms perceive regulation as highly uncertain, relationship with external organizations is detrimental to corporate environmentalism. On the other hand, if firms see regulation as less uncertain, relationship with external organizations is favorable to corporate environmentalism.

Figure 5.7: Results of the Simultaneous Effect Model (Totally Free Model): The Regulation Uncertainty Pair (High/Low Groups)



Global Goodness of Fit Indices (Totally Free Model): Chi-square = 1310.76, df = 1018, p-value = 0.00000, RMSEA = 0.029, NFI = 0.96, CFI = 0.99

Note: number represents beta coefficient and t-value (in parentheses) of high regulation uncertainty and low regulation uncertainty groups, respectively. * p-value < 0.05

Table 5.30: Summary of Hypothesis Testing Results of the Simultaneous Effect Model

Hypotheses	Market Uncertainty	Regulation Uncertainty
H1: Market uncertainty (-)	not supported	not supported
H2: Regulation uncertainty (-)	not supported	not supported
H3: Relationship with external organizations on CE (+)	not supported	not supported
H3a: moderated by market uncertainty	not supported	n/a
H3b: moderated by regulation uncertainty	n/a	supported
H4: Shared vision (+)	supported	supported
H4a: moderated by market uncertainty	not supported	n/a
H4b: moderated by regulation uncertainty	n/a	not supported
H5: Technological capability (+)	supported	supported
H5a: moderated by market uncertainty	not supported	n/a
H5b: moderated by regulation uncertainty	n/a	not supported
H6: Marketing performance (+)	supported	supported
H7: Social performance (+)	supported	supported
H8: Environmental performance (+)	supported	supported

n/a = not applicable

Table 5.30 summarizes results of the hypothesis testing in the simultaneous effect model. As the simultaneous effect model proposes that perceived market and regulation uncertainties simultaneously have a direct effect and a moderating effect, this data set does not support the simultaneous effects. The two perceived uncertainties neither have a direct effect nor a moderating effect, with one exception: data support the moderating effect of perceived regulation uncertainty on the effect of relationship with external organizations on corporate environmentalism. However, shared vision and technological capability are found to have an effect on corporate environmentalism. Also, corporate environmentalism is found to have a positive effect on the marketing, social, environmental performance of firms.

5.7. Supplementary Findings

The 772 usable observations are split into two paired groups: the market uncertainty pair and the regulation uncertainty pair. The market uncertainty pair results from splitting the sample by the median score of perceived market uncertainty, regardless of the score of perceived regulation uncertainty. Likewise, the regulation uncertainty pair is obtained by splitting the sample by the median value of perceived regulation uncertainty, regardless of the score of perceived market uncertainty. In this

section, perceived market uncertainty and perceived regulation uncertainty are taken into account at the same time. The sample is split, according to both the median score of perceived market uncertainty (3.00) and of perceived regulation uncertainty (3.60), resulting in two data sets: the first group consists of 200 firms with high scores on market uncertainty and regulation uncertainty and the second group consists of 208 firms with low scores on market uncertainty and regulation uncertainty. This permits a test of the effect of perceived market uncertainty and regulation uncertainty at the same time. The test supplements the analysis examined in the previous sections. The current test follows the procedure performed earlier: (1) measurement invariance model, (2) the moderating effect model, and (3) the simultaneous effect model.

5.7.1. Measurement Invariance Model

Table 5.31 reports that when the high market and high regulation uncertainty group and the low market and low regulation uncertainty group are independently estimated, chi-square estimates of both groups suggest a model fit: chi-square of the high market and regulation uncertainty group is 583.53, df. = 539, p-value = 0.090 and of the low market and regulation uncertainty group is 548.27, df. = 500, p-value = 0.0667. When the high market and regulation uncertainty group and the low market and regulation uncertainty group are simultaneously estimated, chi-square of the factor structure equivalence model is 1065.80, df. = 1000, p-value = 0.0728. This evidence suggests the high market and regulation uncertainty group and the low market and regulation uncertainty group share the same factor structure. When factor loadings of both groups are equated, chi-square is 1101.87, df. = 1027, p-value = 0.0517. The chi-square increases by 36.07 (1065.80 – 1101.87), degrees with freedom = 27. It is lower by 40.113, the critical chi-square with 27 degrees of freedom. The evidence supports that the measurement invariance of the market and regulation uncertainty pair.

5.7.2. The Moderating Effect Model

The moderating effect model of the high and low market and regulation uncertainty groups is estimated. In general, the results are the same as those found in the moderating effect models, using the market uncertainty pair and the regulation uncertainty pair; however, additional insight is found.

Table 5.31: Results of Measurement Invariance for the Market and Regulation Uncertainty Pair

	χ^2	df	p-value	RMSEA	NFI	CFI	$\Delta\chi^2$	Δdf	Critical Value
Independent groups:									
1.1. High Market & High Regulation	583.53	539	0.090	0.020	0.94	0.99			
1.2. Low Market & Low Regulation	548.27	500	0.0667	0.022	0.95	0.99			
Totally Free Model	1131.79	1039	0.0232	0.021	0.95	0.99			
Factor Structure Equivalence *	1065.80	1000	0.0728	0.018	0.95	0.99			
Factor Loading Equivalence (LX)	1101.87	1027	0.0517	0.019	0.95	0.99	27	36.07	χ^2 at 27 df = 40.113
Factor Covariance Equivalence	1136.11	1072	0.0850	0.017	0.95	0.99	72	70.31	Not tested
Error Variance Equivalence	1405.49	1166	0.0000	0.032	0.94	0.99	166	339.69	Not tested

*The model is the totally free model which has been fitted so that its chi-square significance is greater than 0.05.

Chi-square significances of both models suggest a good fit model: chi-square of the high market and regulation uncertainty group is 277.66, p-value = 0.5789; chi-square of the low market and regulation uncertainty group is 340.53, p-value = 0.1049 (Table 5.32). The coefficient estimates of the effect of shared vision (β_{ShVsn} = 0.35, p-value < 0.05 in the high group; β_{Reltn} = 0.40, p-value < 0.05 in the low group) and of technological capability (β_{TchCp} = 0.67, p-value < 0.05 in the high group; β_{TchCp} = 0.58, p-value < 0.05 in the low group) are significant but the coefficient estimates of the effect of relationship with external organizations are not significant (β_{Reltn} = -0.13, p-value > 0.05 in the high group; β_{Reltn} = 0.02, p-value > 0.05 in the low group).

The statistical significance pattern of the effect coefficients of corporate environmentalism on marketing, social, and environmental performance is also similar to the previous analysis but one exception exists in that in the high market and regulation uncertainty group, the effect coefficient of corporate environmentalism on marketing performance is not significant (β_{Mktprf} = 0.11, p-value > 0.05) whereas in the low market and regulation uncertainty, the coefficient is significant (β_{Mktprf} = 0.31, p-value < 0.05) .

Table 5.32: Results of the Moderating Effect Model for the Market and Regulation Uncertainty Pair

	High in Market and Regulation Uncertainty (n = 200)			Low in Market and Regulation Uncertainty (n = 208)		
	Beta	SE	t-value	Beta	SE	t-value
Antecedents						
Internal Factors						
• Reltn ➔ CE	-0.13	0.11	-1.76	0.02	0.06	0.35
• ShVsn ➔ CE	0.35*	0.08	4.54	0.40*	0.07	5.99
• TchCp ➔ CE	0.67*	0.13	7.08	0.58*	0.11	7.33
Consequences						
• CE ➔ MktPrf	0.11	0.08	1.44	0.31*	0.08	3.92
• CE ➔ SocPrf	0.32*	0.08	3.93	0.35*	0.08	4.43
• CE ➔ EnvPrf	0.38*	0.08	4.44	0.48*	0.07	6.20
Fit Indices:						
Chi-square	277.66			340.53		
df	283			309		
p-value	0.5789			0.1049		
RMSEA	0.000			0.022		
NFI	0.97			0.97		
CFI	1.00			0.99		

* p-value < 0.05

The explained variance of corporate environmentalism in the high market and regulation uncertainty group is 75% and in the low market and regulation uncertainty group is 79% (Table 5.33). The explained variances of marketing, social, and environmental performance in the high market and regulation uncertainty group are 4%, 14%, and 15%, respectively while the explained variances of marketing, social, and environmental performance in the low market and regulation uncertainty group are 8%, 13%, and 12%.

Table 5.33: Explained Variances and Indirect Effects (The Market and Regulation Uncertainty Pair)

Antecedents	**MktPrf**			**SocPrf**			**EnvPrf**			**CE**
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
Reltn	-0.02/0.01	0.02/0.02	-1.11/0.35	-0.06/0.01	0.04/0.02	-1.61/0.35	-0.07/0.01	0.04/0.03	-1.64/0.35	
ShVsn	0.04/0.14*	0.03/0.04	1.36/3.37	0.11*/0.15*	0.04/0.04	2.98/3.61	0.13*/0.19*	0.04/0.04	3.22/4.54	
TchCp	0.10/0.25*	0.07/0.07	1.40/3.56	0.28*/0.27*	0.08/0.07	3.45/3.85	0.33*/0.35*	0.09/0.07	3.84/5.05	
R^2	0.04/0.08			0.14/0.13			0.15/0.12			0.75/0.79

* p-value < 0.05

Table 5.33 reports the indirect effects of relationship with external organizations, shared vision, and technological capability on three performance outcomes. The indirect effects of relationship with external organizations on three performance outcomes are not significant at all across groups: on marketing performance, $\beta = -0.02$, p-value > 0.05 in the high group, $\beta = 0.01$, p-value > 0.05 in the low group; on social performance, $\beta = -0.06$, p-value > 0.05 in the high group, $\beta = 0.01$, p-value > 0.05 in the low group; and on environmental performance, $\beta = -0.07$, p-value > 0.05 in the high group, $\beta = 0.01$, p-value > 0.05 in the low group.

The indirect effects of shared vision and technological capability are significant on only social and environmental performance in both groups and on marketing performance only in the low market and regulation uncertainty group. The effects on marketing performance are not significant in the high market and regulation uncertainty group. On social performance, the coefficient of the indirect effect of shared vision is 0.11, p-value < 0.05 in the high group and is 0.15, p-value < 0.05 in the low group; and on environmental performance is 0.13, p-value < 0.05 in the high group and is 0.19, p-value < 0.05 in the low group. The coefficient of the indirect effect of technological capability on social performance is 0.28, p-value < 0.05 in the high group and is 0.27, p-value < 0.05 in the low group; and on environmental performance is 0.33, p-value < 0.05 in the high group and is 0.35, p-value < 0.05 in the low group. On marketing performance, the coefficient of the indirect effects of shared vision and technological capability is significant only in the low group (in the case of shared vision, $\beta = 0.14$, p-value < 0.05 and in the case of technological capability, $\beta = 0.25$, p-value < 0.05), but is not significant in the high group (in the case of shared vision, $\beta = 0.04$, p-value > 0.05 and in the case of technological capability, $\beta = 0.10$, p-value > 0.05).

The moderating effect of market and regulation uncertainty is next examined. Using the two Approaches, none of chi-square changes is greater than 3.84, the critical chi-square (Table 5.34). Thus, no evidence supports the moderating effect of the market and regulation uncertainty on the relationships between internal factors and corporate environmentalism.

In sum, as for the moderating effect model, using the market and regulation uncertainty pair, most of the results are the same as the results of the estimated models, using the market uncertainty pair and regulation uncertainty pair.

Table 5.34: Results of Multiple Group Analysis for the Market and Regulation Uncertainty Pair

	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High in Market and Regulation Uncertainty	277.66	283	0.5789	0.022		
1.2. Low in Market and Regulation Uncertainty	340.53	309	0.1049	0.000		
Totally Free Model	618.19	592	0.221	0.015		
(Approach 1: Free ➔ Fixed)						
Constrained Relationship:						
Retln ➔ CE	621.05	593	0.2058	0.015	2.86	1
ShVsn ➔ CE	618.67	593	0.2254	0.015	0.48	1
TchCp ➔ CE	618.72	593	0.2250	0.015	0.53	1
CE ➔ MktPrf	620.86	593	0.2073	0.015	2.67	1
CE ➔ SocPrf	618.51	593	0.2267	0.015	0.32	1
Ce ➔ EnvPrf	619.14	593	0.2214	0.015	0.95	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	625.17	598	0.2139	0.015		
Retln ➔ CE	621.60	597	0.2353	0.014	-3.57	1
ShVsn ➔ CE	623.47	597	0.2194	0.015	-1.70	1
TchCp ➔ CE	624.73	597	0.2091	0.015	-0.44	1
CE ➔ MktPrf	623.83	597	0.2164	0.014	-1.34	1
CE ➔ SocPrf	625.32	597	0.2044	0.015	0.15	1
Ce ➔ EnvPrf	624.79	597	0.2086	0.015	-0.38	1

Note: Critical chi-square value with 1 degree of freedom = 3.84

Analysis of the supplementary findings using the market and regulation uncertainty pair reveals two additional pieces of evidence, which are different from the analyses using the market uncertainty pair and the regulation uncertainty pair. First, in the high market and regulation uncertainty group, the effect coefficient of corporate environmentalism on marketing performance is not significant but in the low market and regulation uncertainty group, the coefficient of the relationship is significant. Second, in the high market and regulation uncertainty group, the coefficients of the indirect effects of shared vision and technological capability on marketing performance are not significant.

5.7.3. The Simultaneous Effect Model

The simultaneous effect model is investigated in this section. Chi-square significance of both models is greater than 0.05, supporting a good fit model (Table 5.35). The effect coefficients of perceived market uncertainty and perceived regulation uncertainty on corporate environmentalism are not significant in both models. The coefficient of the effect of relationship with external organizations is not significant, but the coefficients of the effect of shared vision and technological capability are significant in both models.

Table 5.35: Results of the Simultaneous Effect Model for the Market and Regulation Uncertainty Pair

	High in Market and Regulation Uncertainty (n = 200)			**Low in Market and Regulation Uncertainty (n = 208)**		
	Beta	SE	t-value	Beta	SE	t-value
Antecedents						
External Factors						
• MktUn ➔ CE	0.11	0.10	1.48	0.00	0.08	-0.03
• RegUn ➔ CE	-0.03	0.26	-0.44	-0.06	0.12	-1.03
Internal Factors						
• Reltn ➔ CE	-0.08	0.07	-1.35	0.00	0.05	0.06
• ShVsn ➔ CE	0.30*	0.09	3.63	0.39*	0.07	5.68
• TchCp ➔ CE	0.67*	0.12	6.90	0.58*	0.10	7.37
Consequences						
• CE ➔ MktPrf	0.12	0.08	1.48	0.31*	0.08	4.10
• CE ➔ SocPrf	0.34*	0.08	4.11	0.35*	0.08	4.51
• CE ➔ EnvPrf	0.37*	0.08	4.10	0.50*	0.08	5.99
Fit Indices:						
Chi-square	593.54			556.13		
df	543			509		
p-value	0.0657			0.0729		
RMSEA	0.022			0.021		
NFI	0.94			0.95		
CFI	0.99			0.99		

* p-value < 0.05

The coefficients of the influence of corporate environmentalism on social performance and environmental performance are significant in both models but on marketing performance, the coefficient of the influence of corporate

environmentalism is significant only in the low market and regulation uncertainty group. It is not significant in the high market and regulation uncertainty group.

Table 5.36 reports the explained variances of corporate environmentalism. In the high group, the explained variance is 75%: in the low group, 81%. The coefficients of the indirect effects of perceived market uncertainty, perceived regulation uncertainty, and relationship with external organizations on three performance outcomes are not significant at all in both groups. The coefficients of the indirect effects of shared vision and technological capability on all performance outcomes are significant in the two groups; however, in the high market and regulation uncertainty group, the coefficients of the indirect effects of shared vision and technological capability on marketing performance are not significant whereas in the low market and regulation uncertainty group, they are significant.

Table 5.36: Explained Variances and Indirect Effects (The Market and Regulation Uncertainty Pair)

Antecedents	**MktPrf**			**SocPrf**			**EnvPrf**			**CE**
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
MktUn	0.02/0.00	0.02/0.03	1.04/-0.03	0.05/0.00	0.03/0.03	1.39/-0.03	0.05/0.00	0.03/0.04	1.40/-0.03	
RegUn	-0.01/-0.04	0.03/0.04	-0.42/-1.00	-0.04/-0.04	0.09/0.04	-0.44/-1.00	-0.04/-0.06	0.09/0.06	-0.44/-1.01	
Reltn	-0.01/0.00	0.01/0.02	-0.99/0.06	-0.03/0.00	0.03/0.02	-1.28/0.06	-0.03/0.00	0.02/0.02	-1.28/0.06	
ShVsn	0.04/0.14*	0.03/0.04	1.36/3.40	0.11*/0.15*	0.04/0.04	2.73/3.59	0.10*/0.19*	0.04/0.04	2.76/4.33	
TchCp	0.10/0.26*	0.07/0.07	1.43/3.67	0.29*/0.28*	0.08/0.07	3.56/3.92	0.29*/0.36*	0.08/0.07	3.62/4.95	
R^2	0.01/0.08			0.09/0.13			0.10/0.13			0.75/0.81

* p-value < 0.05

Table 5.37 reports result of multiple group analysis for the market and regulation uncertainty pair. By using Approaches 1 and 2, none of the chi-square changes is greater than 3.84, the critical chi-square. Thus, the moderating effect of market and regulation uncertainty in the simultaneous effect model is not supported.

In summary, the simultaneous effect model using the market and regulation uncertainty pair reveals that in the high market and regulation uncertainty group, the influence of corporate environmentalism on marketing performance is not significant and the indirect effect of shared vision and technological capability is not significant.

This finding is in line with the findings from the moderating effect model using the market and regulation uncertainty pair.

Table 5.37: Results for Multiple Group Analysis for the Market and Regulation Uncertainty Pair

	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High in Market and Regulation Uncertainty	593.54	543	0.066	0.022		
1.2. Low in Market and Regulation Uncertainty	556.13	509	0.073	0.021		
Totally Free Model before fitting	1149.67	1052	0.019	0.021		
Totally Free Model after fitting *	1069.55	1008	0.087	0.017		
(Approach 1: Free ➔ Fixed)						
Constrained Relationships:						
Retln ➔ CE	1069.51	1009	0.091	0.017	-0.04	1
ShVsn ➔ CE	1070.57	1009	0.087	0.017	1.02	1
TchCp ➔ CE	1069.72	1009	0.090	0.017	0.17	1
CE ➔ MktPrf	1071.45	1009	0.084	0.017	1.90	1
CE ➔ SocPrf	1069.73	1009	0.090	0.017	0.18	1
CE ➔ EnvPrf	1070.89	1009	0.086	0.017	1.34	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	1076.54	1016	0.091	0.017		
Retln ➔ CE	1075.99	1015	0.090	0.017	-0.55	1
ShVsn ➔ CE	1074.42	1015	0.095	0.017	-2.12	1
TchCp ➔ CE	1075.94	1015	0.090	0.017	-0.60	1
CE ➔ MktPrf	1075.89	1015	0.090	0.017	-0.65	1
CE ➔ SocPrf	1076.53	1015	0.088	0.017	-0.01	1
CE ➔ EnvPrf	1075.31	1015	0.092	0.017	-1.23	1

Note: Critical chi-square value with 1 degree of freedom = 3.84

* The model is the totally free model which has been fitted.

5.8. Summary of Hypothesis Testing and the Estimated Models

Incorporating results from analyzing the direct effect, the moderating effect, and the simultaneous effect models, using the market uncertainty pair and the regulation uncertainty pair, together with the supplementary findings, using the market and regulation uncertainty pair, this section summarizes hypothesis testing and the estimated models.

5.8.1. Summary of Hypothesis Testing

Table 5.38 summarizes the results of the hypothesis testing. Hypothesis 1 proposes that perceived market uncertainty negatively affects corporate environmentalism. In the direct effect model, perceived market uncertainty adversely affects corporate environmentalism as hypothesized, but in the simultaneous effect model, the uncertainty does not significantly affect the strategy. Thus, the evidence partially supports Hypothesis 1. As for the moderating effect of perceived market uncertainty on the influences of three internal resources and capabilities on corporate environmentalism, results of the moderating effect model and the simultaneous effect model do not indicate that perceived market uncertainty has a moderating effect. Hence, Hypothesis 3a, 4a, and 5a are not confirmed.

Hypothesis 2, that perceived regulation uncertainty negatively influences corporate environmentalism is not confirmed by the results from the direct effect model and the simultaneous effect model. Thus, Hypothesis 2 is not supported. Hypotheses 4b, and 5b are not supported either. That the effect of shared vision and technological capability on corporate environmentalism is moderated by perceived regulation uncertainty is not supported in either the moderating effect or the simultaneous effect models. However, Hypothesis 3b proposing that the effect of relationship with external organizations on corporate environmentalism is moderated by perceived regulation uncertainty is supported. Specifically regulation uncertainty changes the direction of the effect from a negative effect in the high regulation uncertainty group to a positive effect in the low regulation uncertainty group.

Hypothesis 3 states relationship with external organizations has a positive influence on corporate environmentalism. Results from all models do not lend support to the hypothesis. Thus, Hypothesis 3 is not supported.

Hypothesis 4 proposes that shared vision is positively related to corporate environmentalism. Results from analysis across all models support Hypothesis 4, Thus, Hypothesis 4 is supported.

Hypothesis 5 is also supported. Analysis results indicate a positive influence of technological capability on corporate environmentalism.

Hypotheses 6, 7, and 8 are supported. Corporate environmentalism has a positive impact on marketing, social, and environmental performance in the direct effect, the moderating effect, and the simultaneous effect models.

Table 5.38: Results of the Hypothesis Testing and Supplementary Findings

Hypotheses	**The Direct Effect Model**	**The Moderating Effect Model**			**The Simultaneous Effect Model**		
		Market Uncertainty	Regulation Uncertainty	Market & Regulation Uncertainty*1	Market Uncertainty	Regulation Uncertainty	Market & Regulation Uncertainty*1
H1	supported	--	--	--	n/s	n/s	n/s
H2	n/s	--	--	--	n/s	n/s	n/s
H3	n/s	n/s	n/s	n/s	n/s	n/s	n/s
H3a (MktUn)	--	n/s	--	--	n/s	--	--
H3b (RegUn)	--	--	supported	--	--	supported	--
(Mkt and Reg Un)*1	--	--	--	n/s	--	--	n/s
H4	supported	supported	supported	supported	supported	supported	supported
H4a (MktUn)	--	n/s	--	--	n/s	--	--
H4b (RegUn)	--	--	n/s	--	--	n/s	--
(Mkt and Reg Un)*1	--	--	--	n/s	--	--	n/s
H5	supported	supported	supported	supported	supported	supported	supported
H5a (MktUn)	--	n/s	--	--	n/s	--	--
H5b (RegUn)	--	--	n/s	--	--	n/s	--
(Mkt and Reg Un)*1	--	--	--	n/s	--	--	n/s
H6	supported	supported	supported	partially supported	supported	supported	partially supported
H7	supported	supported	supported	supported	supported	supported	supported
H8	supported	supported	supported	supported	supported	supported	supported

Note: n/s = not supported; " -- " = not tested

*1 is results from supplementary findings

Supplementary findings are in line with the tested hypotheses; however, the supplementary analysis provides additional insight. Using the market and regulation uncertainty pair, supplementary analysis shows that the positive influence of corporate environmentalism on marketing performance is not confirmed in the high market and regulation uncertainty group, but it is confirmed in the low market and regulation uncertainty group.

By analyzing data in three proposed models, using three pairs of data set: the market uncertainty pair, the regulation uncertainty pair, and the market and regulation uncertainty pair, the results suggest a consistent pattern of findings. Results illustrate a limited effect of perceived market uncertainty and regulation uncertainty. Results does not indicate a positive effect of firms' relationship with external organizations, but they fully support the positive effect of shared vision and technological capability on corporate environmentalism and the positive effect of corporate environmentalism on the three performance outcomes. Generally, results suggest a positive influence of corporate environmentalism on marketing, social, and environmental performance.

5.8.2. Summary of the Estimated Models

In addition to the results of hypothesis testing, this section summarizes statistics of the estimated models, particularly, the goodness of fit indices and explained variances of endogenous variables. They assist in evaluating the models. Table 5.39 recaps the statistics. Goodness of fit indices of the estimated models indicate either a reasonable model fit or a good fit. Some chi-square significances are lower than 0.05 while some are greater than 0.05. RMSEAs are between 0.000 and 0.037, which are very close to zero. NFIs are between 0.94 and 0.99, which are very close to one, and CFIs are 0.98, 0.99, and 1.00.

Estimates of explained variances of corporate environmentalism across all models are satisfactory: they are between 57% and 82%. The variances of marketing performance, social, and environmental performance that are explained by corporate environmentalism are relatively small. Among explained variances of three performances, explained variances of marketing performance seem to be the least. They are between 1% and 13%. Explained variances of social performance are between 9% and 18%. And explained variances of environmental performance are between 7% and 16%.

Table 5.39: Summary of the Estimated Models

Goodness of Fit Indices	**The Direct Effect Model (n = 772)**	**The Moderating Effect Model**						**The Simultaneous Effect Model**					
		Market Uncertainty Pair		Regulation Uncertainty Pair		Market and Regulation Uncertainty Pair		Market Uncertainty Pair		Regulation Uncertainty Pair		Market and Regulation Uncertainty Pair	
		High (n = 356)	Low (n = 333)	High (n = 316)	Low (n = 358)	High (n = 200)	Low (n = 208)	High (n = 356)	Low (n = 333)	High (n = 316)	Low (n = 358)	High (n = 200)	Low (n = 208)
Chi-square	623.87	355.48	344.58	363.57	337.96	277.66	340.53	716.62	675.32	767.25	697.93	593.54	556.13
df	491	297	304	323	298	283	309	534	537	535	538	543	509
p-value	0.000	0.011	0.054	0.059	0.055	0.578	0.105	0.000	0.000	0.000	0.000	0.066	0.729
RMSEA	0.019	0.024	0.020	0.020	0.019	0.000	0.022	0.031	0.028	0.037	0.029	0.022	0.021
NFI	0.99	0.98	0.98	0.98	0.98	0.97	0.97	0.97	0.96	0.95	0.97	0.94	0.95
CFI	1.00	1.00	1.00	1.00	1.00	1.00	0.99	0.99	0.99	0.98	0.99	0.99	0.99
Explained Variance (R^2)													
Corporate environmentalism	0.81	0.57	0.78	0.64	0.60	0.75	0.79	0.65	0.80	0.67	0.82	0.75	0.81
Marketing performance	0.09	0.07	0.06	0.05	0.06	0.04	0.08	0.08	0.08	0.05	0.13	0.01	0.08
Social performance	0.18	0.12	0.14	0.15	0.10	0.14	0.13	0.15	0.14	0.15	0.17	0.09	0.13
Environmental performance	0.12	0.07	0.14	0.07	0.07	0.15	0.12	0.07	0.16	0.08	0.16	0.10	0.13

Summary of the hypothesis testing results and summary of the estimated models assist to answer the research questions of the current research.

Research Question 1 asks which model can best explain corporate environmentalism and its marketing, social, and environmental performance outcomes. Because goodness of fit indices of the estimated models demonstrate either a reasonable fit model or a good fit model and explained variances of the endogenous variables do not particularly differ, the most simplified and parsimonious model, the direct effect model, is appropriate. The model is a reasonable fit model. It explains 81% of the explained variance of corporate environmentalism, 9% of marketing performance, 18% of social performance, and 12% of environmentalism performance. The explained variances are in the high ranges of the corresponding estimated explained variances.

Research Question 2 inquires as to whether or not the three internal factors can explain corporate environmentalism. The summary of the hypothesis testing points out that shared vision and technological capability are two capabilities of firms that have a positive influence on corporate environmentalism but relationship with external organizations does not.

Research Question 3 asks what the effects (direct, moderating, or simultaneous) of perceived market uncertainty and perceived regulation uncertainty are on corporate environmentalism. Although the direct effect coefficient of perceived market uncertainty on corporate environmentalism is negatively significant in the direct effect model, the coefficient is very small (β_{MktUn} = -0.05, p-value < 0.05). It may not have a practical significance. Thus, this research concludes that perceived market uncertainty has no effect on corporate environmentalism. Also, perceived regulation uncertainty has no direct effect on corporate environmentalism. However, perceived regulation uncertainty has a moderating effect exclusively on the relationship between relationship with external organizations and corporate environmentalism.

Research Question 4 inquires as to whether or not corporate environmentalism improves marketing, social, and environmental performance. Results suggest that corporate environmentalism enhances marketing, social, and environmental performance; however, improvement in marketing performance due to corporate environmentalism is not evident for firms perceiving environmental market and environmental regulation as highly uncertain.

5.9. Conclusion

This chapter analyzes data collected from manufacturing firms in four industries. A total of 772 observations are split into 2 paired groups: the market uncertainty pair (a high group and a low group) and the regulation uncertainty pair. Additionally, in the supplementary findings section, the sample is split into the market and regulation uncertainty pair. Three pairs of data are used to estimate three proposed models: the direct effect model, the moderating effect model, and the simultaneous effect model.

Results from the analysis of three data sets are reported and summarized. Answers to research questions of the current research are articulated in this chapter.

Chapter VI

Discussion

This chapter discusses results of the current research, presents theoretical and managerial implications, and deliberates the limitations and suggestions for future research.

6.1. Discussion

Based on the marketing strategy formulation perspective, the current research incorporates external factors of firms, perceived market uncertainty and perceived regulation uncertainty, together with internal resources and capabilities of firms, relationship with external organizations, shared vision, and technological capability, into three proposed models. The proposed models investigate the influence of external and internal antecedents on corporate environmentalism, which is thought of as a strategy. The proposed models also examine three performance outcomes of corporate environmentalism, namely marketing performance, social performance, and environmental performance.

The three proposed models consist of the direct effect, the moderating effect, and the simultaneous effect models. Each model differs in the type of effects of perceived market uncertainty and perceived regulation uncertainty. The direct effect model studies the direct effect of the two perceived uncertainties on corporate environmentalism. The moderating effect model, which resembles a moderated mediation model, investigates the moderating effect of perceived uncertainties on three associations between internal resources and capabilities and corporate environmentalism. Finally, the simultaneous effect model investigates the direct effect and the moderating effect of perceived uncertainties simultaneously.

To test the models, a data set of 772 observations was collected, through a mail survey, from firms in the food, automotive and parts, electrical and electronics, and garment and textile industries. Multiple group analysis by structural equation modeling (SEM) was utilized to analyze the data, particularly the moderating effect of perceived uncertainties. The analysis was done using SPSS 17.0 and LISREL 8.53 statistical programs.

Results from the analysis indicate that perceived market uncertainty has neither a direct effect nor a moderating effect on corporate environmentalism. Although, the coefficient of perceived market uncertainty significantly and negatively influences corporate environmentalism in the direct effect model (β_{MktUn} = -0.05, p-value < 0.05), it is not significant in the simultaneous effect model. Moreover, even though the result supports the negative effect, the magnitude of the effect is quite small. Therefore, it may not have a practical significance. Perceived market uncertainty also does not have a moderating effect. Chi-square statistics do not significantly change when the coefficients of the effect of the internal resources and capabilities on corporate environmentalism in both the moderating effect and simultaneous effect models are constrained. Thus, the results suggest that perceived market uncertainty neither has a direct effect, a moderating effect, nor a simultaneous effect on corporate environmentalism.

The evidence reveals a limited effect of perceived regulation uncertainty. The perceived regulation uncertainty does not have a significant direct effect on corporate environmentalism in either the direct effect model or the simultaneous effect model. Yet, in the moderating effect and simultaneous effect models, results show the moderating effect of perceived regulation uncertainty on the association between firms' relationship with external organizations and corporate environmentalism. The direction of the effect of the relationship with external organizations differs in the paired regulation uncertainty groups. In the low perceived regulation uncertainty group, the coefficient estimate of the relationship with external organizations is positive whereas, in the high perceived regulation uncertainty group, it is negative. This piece of evidence plausibly suggests that perceived regulation uncertainty is a

pre-requisite of firms' interpretation of information acquired through their relationship with external organizations. The information supports firms' environmental decisions and activities when firms understand the regulation and perceive it as less uncertain, but when firms do not understand the regulation and see it as highly unpredictable, the acquired information from external organizations is unfavorable to the environmental decisions and activities. However, note that evidence illustrates that the information acquired through firms' relationship with external organizations plays a supporting role. It does not critically determine corporate environmentalism because the direct effect of the relationship with external organizations across all models is statistically insignificant.

Two plausible explanations of no effect of perceived market uncertainty and a limited effect of perceived regulation uncertainty on corporate environmentalism are (1) the nature of firms' business activity and (2) an alternative conceptualization of corporate environmentalism.

For the first plausible explanation, Table 5.7 in Chapter V shows that the majority of firms in the sample produce original manufactured products (OEM products) in a very high percentage. Half of the firms in the automotive and parts and electrical and electronics industries, for instance, manufacture OEM products as more than 80% of their total production. Generally, OEM products are intermediate goods and parts, not finished products. OEM manufacturers sell the intermediate products to resellers for assembling, branding, and distributing the finished goods to consumers or retailers. Thus, it can be said that a large portion of firms in the sample engage in a Business to Business (B-to-B) relationship. Kotler and Keller (2006) explains that a B-to-B relationship (1) involves a few number of buyers, (2) engages a professional buying process, (3), is a close relationship between suppliers and customers, and (4) is a long-term relationship. Because the percentage of OEM products of firms is so high, firms' operations greatly depends on the B-to-B relationship. Through the close, professional B-to-B relationship, firms gradually learn, understand, and predict market trend and future demand. Thus, OEM production may have an effect on firms'

perceived market uncertainty and obscure its influence on corporate environmentalism.

In addition to the high percentage of OEM products, the sample firms possibly are also exporters. The current research does not have data on sample firms' export activities; however, it can be reasonably conceived that the sample firms in the four targeted industries export their products, particularly to developed countries. Among the major countries importing products from the food and garment and textile industries are the United States and Japan (National Food Institute, 2009: online; Thailand Textiles Institute, 2009: online); from the automotive and part industry, Australia and the United Kingdom (Thailand Automotive Institute, 2009: online); and from the electrical and electronics industry, the United States, the European Union, and Japan (Electrical and Electronics Institute, 2009: online). These export markets are developed countries whose environmental standards are high, where environmental regulation is stringent, and where environmentally-friendly markets are more sensitive. Through exporting activities, firms possibly learn the environmental standards and regulation required by the host countries; as a result, they make sense of and understand the environmental regulation, and perhaps predict its trend. In short, OEM production and export activities of firms closely tie to perceived market uncertainty and perceived regulation uncertainty in that OEM production and export activities may have an influence on the effect of the two perceived uncertainties on corporate environmentalism.

The above explanation attempts to explain how the effect of perceived market uncertainty and perceived regulation uncertainty on corporate environmentalism may depend on firms' level of OEM production and export activities. To demonstrate this possible explanation, a post-hoc analysis was performed. The 772 firms are classified by the level of their original equipment manufactured products (OEM). Only the first and the fourth quartile are included in the analysis in order to be certain that the high OEM group differs from the low OEM group. The first quartile (the low OEM group) consists of 186 firms whose percentage of OEM products is less than 50%. The fourth quartile (the high OEM group) consists of 269 firms whose percentage of OEM

products is greater than 80%. Firms whose percentage of OEM products falls into the range of 50% and 80% are not included in the analysis.

Table 6.1 reports estimates of the two models: the high OEM group and the low OEM group when the two groups are estimated independently. The goodness of fit indices support a good model fit. Chi-square p-values of the models of the high and low OEM groups are 0.065 and 0.065: RMSEAs are 0.019 and 0.023: NFIs are 0.97 and 0.94: and CFIs are 0.99, respectively.

Table 6.1: Results of the Direct Effect Model for High versus Low OEM Firms

	High OEM Firms (n = 269)			**Low OEM Firms (n = 186)**		
	Beta	SE	t-value	Beta	SE	t-value
Antecedents						
External Factors						
• MktUn ➔ CE	-0.09*	0.05	-2.12	0.07	0.07	1.18
• RegUn ➔ CE	0.14*	0.06	3.03	-0.11**	0.13	-1.57
Internal Factors						
• Reltn ➔ CE	-0.01	0.05	-0.31	-0.06	0.07	-0.90
• ShVsn ➔ CE	0.26*	0.06	4.25	0.35*	0.15	3.29
• TchCp ➔ CE	0.69*	0.09	9.39	0.66*	0.13	6.22
Consequences						
• CE ➔ MktPrf	0.38*	0.07	5.56	0.19*	0.09	2.26
• CE ➔ SocPrf	0.33*	0.07	4.74	0.34*	0.08	3.82
• CE ➔ EnvPrf	0.37*	0.07	5.54	0.37*	0.08	4.24
Fit Indices:						
Chi-square	551.95			579.10		
df	503			529		
p-value	0.065			0.065		
RMSEA	0.019			0.023		
NFI	0.97			0.94		
CFI	0.99			0.99		

* p-value < 0.05

** p-value < 0.10

The coefficient estimates of the positive effect of shared vision and technological capability are significantly positive (β_{ShVsn} = 0.26 and 0.35, p-value < 0.05: β_{TchCp} = 0.69 and 0.66, p-value < 0.05) whereas that of the relationship with external organizations is insignificant (β_{Reltn} = -0.01 and -0.06, p-value > 0.05). The positive influence of corporate environmentalism on marketing, social, and

environmental performance is also supported (β_{MktPrf} = 0.38 and 0.19, p-value < 0.05: β_{SocPrf} = 0.33 and 0.34, p-value < 0.05: β_{EnvPrf} = 0.37 and 0.37, p-value < 0.05). The negative influence of perceived market uncertainty on corporate environmentalism is evident in the high OEM group (β_{MktUn} = -0.09, p-value < 0.05) but is insignificant in the low OEM group (β_{MktUn} = 0.07, p-value > 0.05). Note that the significant coefficient of perceived market uncertainty is as small as 0.09. The coefficient estimate of perceived regulation uncertainty in the high OEM group is positively significant at the significance level of 0.05 (β_{RegUn} = 0.14, p-value < 0.05) whereas it is significant at the significance level of 0.10 in the low OEM group (β_{RegUn} = -0.11, p-value < 0.10).

Table 6.2: Results of Multiple Group Analysis for the High versus Low OEM Firms

	χ^2	df	p-value	RMSEA	$\Delta\chi^2$	Δdf
Individual Groups:						
1.1. High OEM Group	551.95	503	0.065	0.019		
1.2. Low OEM Group	579.10	529	0.065	0.023		
Totally Free Model before fitting	1131.05	1032	0.017	0.021		
Totally Free Model after fitting*	985.94	926	0.839	0.017		
(Approach 1: Free ➔ Fixed)						
Constrained Relationships:						
MktUn ➔ CE	988.13	927	0.800	0.017	2.19	1
RegUn ➔ CE	991.98	927	0.068	0.018	**6.04**	1
Retln ➔ CE	985.91	927	0.088	0.017	-0.03	1
ShVsn ➔ CE	986.02	927	0.087	0.017	0.08	1
TchCp ➔ CE	985.93	927	0.088	0.017	-0.01	1
CE ➔ MktPrf	989.14	927	0.077	0.017	3.20	1
CE ➔ SocPrf	986.35	927	0.086	0.017	0.41	1
CE ➔ EnvPrf	986.60	927	0.085	0.017	0.66	1
(Approach 2: Fixed ➔ Free)						
GA & BE Constrained Model	995.78	934	0.079	0.017		
MktUn ➔ CE	995.71	933	0.076	0.017	-0.07	1
RegUn ➔ CE	991.32	933	0.090	0.017	**-4.46**	1
Retln ➔ CE	995.58	933	0.076	0.017	-0.20	1
ShVsn ➔ CE	995.54	933	0.076	0.017	-0.24	1
TchCp ➔ CE	995.59	933	0.076	0.017	-0.19	1
CE ➔ MktPrf	993.26	933	0.084	0.017	-2.52	1
CE ➔ SocPrf	995.90	933	0.075	0.017	0.12	1
CE ➔ EnvPrf	995.52	933	0.076	0.017	-0.26	1

Note: Critical chi-square value with 1 degree of freedom = 3.84

* The model is the totally free model which has been fitted so that the chi-square significance is greater than 0.05.

When comparing the magnitude and direction of the estimated relationships in the two models, only the difference between the coefficient estimates of the relationship between perceived regulation uncertainty and corporate environmentalism is found. The level of OEM moderates the relationship between perceived regulation uncertainty and corporate environmentalism. The chi-square changes by 6.04 (991.98 – 958.94), using Approach 1 and by 4.46 (995.78 – 991.32), using Approach 2 (Table 6.2). Table 6.1 indicates that the effect coefficient of perceived regulation uncertainty in the high OEM group is positively significant (β_{RegUn} = 0.14, p-value < 0.05) but the coefficient in the low OEM group is negatively significant (β_{RegUn} = -0.11, p-value < 0.10). The direction of perceived regulation uncertainty between the two groups is opposite. Evidence indicates that perceived regulation uncertainty positively affects corporate environmentalism in the high group whereas it negatively affects corporate environmentalism in the low group.

Variance of corporate environmentalism that is explained by five antecedents is 80% in the high OEM group and 86% in the low OEM group (Table 6.3). Explained variance of marketing performance is 14% in the high OEM group and 5% in the low OEM group; of social performance is 16% in the high OEM group and 15% in the low OEM group; and of environmental performance is 10% in the high OEM group and 15% in the low OEM group.

Indirect effects of three internal factors on three performances reveal the same pattern of the analysis results when using the market uncertainty pair, the regulation uncertainty pair, and the market and regulation uncertainty pair. The indirect effects of shared vision and technological capability are statistically significant but the indirect effect of relationship with external organizations is not in the two paired groups (Table 6.3). Some of the indirect effects of two perceived uncertainties on three performance outcomes, which are not significant, when the sample is split by market and/or regulation uncertainties (Table 5.26, 5.27 and 5.36), are now significant when the sample is split by the level of OEM production.

Table 6.3: Explained Variances and Indirect Effects (the High versus Low OEM Firms)

Antecedents	MktPrf			SocPrf			EnvPrf			CE
	Beta	SE	t-value	Beta	SE	t-value	Beta	SE	t-value	
MktUn	-0.04*/0.02	0.02/0.02	-1.99/1.04	-0.03/0.02	0.02/0.02	-1.93/1.12	-0.04*/0.03	0.02/0.02	-1.99/1.13	
RegUn	0.07*/-0.04**	0.03/0.03	2.69/-1.29	0.06*/-0.06**	0.02/0.04	2.56/-1.46	0.06*/-0.06**	0.02/0.04	2.70/-1.48	
Reltn	-0.01/-0.01	0.02/0.02	-0.31/-0.83	0.00/-0.02	0.02/0.02	-0.31/-0.87	-0.01/-0.02	0.02/0.02	-0.31/-0.88	
ShVsn	0.10*/0.10	0.03/0.05	3.42/1.86	0.08*/0.15*	0.03/0.06	3.16/2.51	0.09*/0.16*	0.03/0.06	3.44/2.62	
TchCp	0.35*/0.17*	0.07/0.08	4.92/2.12	0.28*/0.25*	0.07/0.08	4.24/3.28	0.31*/0.27*	0.06/0.08	4.99/3.56	
R^2	0.14/0.05			0.16/0.15			0.10/0.15			0.80/0.86

Note: Statistics on the left-hand side are estimates in the high OEM group; on the right-hand side, the low OEM group. *p-value < 0.05, **p-value < 0.10

In the high OEM group, the indirect effects of perceived market uncertainty on marketing performance and environmental performance are significant, but the effect on social performance is not significant. In the low OEM group, the indirect effects of perceived market uncertainty on three performance outcomes are not significant at all. The indirect effects of perceived regulation uncertainty on all performance outcomes in the high OEM group are statistically and positively significant at the 0.50 significance level, whereas the effects on all performance outcomes in the low OEM group are negatively significant at the 0.10 significance level.

The analysis indicates that perceived market uncertainty has no effect on corporate environmentalism because it may not have a practical significance. Its coefficient is quite small (β_{MktUn} = -0.09, p-value < 0.05). The analysis also reveals another interesting point: perceived regulation uncertainty, which does not have a direct effect on corporate environmentalism when using the market uncertainty pair, the regulation uncertainty pair, and the market and regulation uncertainty pair, is positive and significant in the high OEM group and is negative and significant (at α = 0.10) in the low OEM group.

Perceived regulation uncertainty has no indirect effect on the three performance outcomes in the previous analysis. In the post-hoc analysis, perceived regulation uncertainty has a positive indirect effect on marketing, social, and environmental performance in the high OEM group at 0.05 significance level and a negative indirect effect in the low OEM group at 0.10 significance level (Table 6.3).

In conclusion, evidence suggests that perceived regulation uncertainty has a positive effect as well as a negative effect on corporate environmentalism, depending on the level of firms' OEM production. Nevertheless, note that the magnitude of the coefficient is weak, 0.14 in the high OEM group and 0.11 in the low OEM group. Evidence supports that level of OEM production has an influence on perceived regulation uncertainty, but it does not have on perceived market uncertainty.

One might question why perceived regulation uncertainty has a positive effect on corporate environmentalism in the high OEM group. The direction of the effect is opposite to the hypothesized direction of the relationship. As explained earlier, firms with a high percentage of OEM production engage in close B-to-B relationships and in export activities. Their business depends mainly on markets in developed countries whose environmental standards and regulations are stringent. In order to sell OEM products to those markets, firms have to meet the markets' environmental standards and regulations; otherwise, they can not sell. In the case that firms are capable to understand, implement, and comply with the environmental standards and regulations of the host countries (a low perceived regulation uncertainty), firms know precisely the environmentally-friendly practices they have to comply with. However, if firms are uncertain about environmental practices and still want to do business with those countries (a high perceived regulation uncertainty), they have to put more effort into ascertaining that their OEM products meet the environmental regulations in the host countries. Thus, in the high OEM firms, the higher degree of perceived regulation uncertainty of firms, the greater level of corporate environmentalism.

On the other hand, perceived regulation uncertainty has a negative effect in the low OEM group. This is because firms in this group balance their business risk and do not solely depend on the OEM production. They can afford to hold off decisions and take time to understand environmental regulations as suggested by Milliken, 1987. Thus, the effect of perceived regulation uncertainty in this group is negative.

The second plausible explanation is about the notion of corporate environmentalism. In this research, corporate environmentalism is conceptualized as

a strategy. The strategic decisions made by firms, theoretically, are influenced by both external and internal factors. However, evidence from the current research does not fully support the effect of external factors, perceived market and regulation uncertainty. A different conceptualization of corporate environmentalism may be relevant and beneficial in explaining corporate environmentalism. It rests on literature on business ethics, corporate citizenship, corporate code of ethics, and/or corporate social responsibility (e.g., Stohl, Stohl, and Popova, 2009; Maignan and Ferrel, 2000; Lindgreen and Swaen, 2005). According to the literature, corporate environmentalism is one of the responsibilities firms have to society (Igalens and Gond, 2005), as opposed to a strategy which is a firm's choice. Strictly defined by Porter (1996: page 64), "competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value." Porter (1996) also explained that strategy differs from operational effectiveness. Operational effectiveness refers to "performing similar activities better than rivals perform them…. It refers to number of practices that allow a company to better utilize its inputs by, for example, reducing defects in products or developing better products faster" (Porter, 1996: page 62). Porter and van der Linde (1995b) claimed that "[w]hen scrap, harmful substances, or energy forms are discharged into the environment as pollution, it is a sign that resources have been used incompletely, inefficiently, or ineffectively" (Porter and van der Linde, 1995b: page 122). According to this line of thought, corporate environmentalism is an element of business ethics driving socially responsible firms to improve their resource effectiveness and abate their burden on the natural environment.

Suthisak Kraisornsuthasinee and Fredic William Sweirczek (2006) studied the corporate social responsibility (CSR) of Thai firms. They found that firms thought of CSR as a business ethic, not a strategy. Note that corporate environmentalism is one of the dimensions of CSR.

Perhaps, antecedents of corporate environmentalism as a business ethic include a different set of factors, because corporate environmentalism is a responsibility firms are obligated to embrace in disregard of perceived uncertainty of

such external factors as market or regulation. Thus, conceptualization of corporate environmentalism as a business ethic perhaps obscures the effect of perceived market and regulation uncertainties, which are hypothesized to have an influence on strategy.

The current research substantiates the positive influence of shared vision on corporate environmentalism. It further confirms evidence found in Aragón-Correa et al.'s (2008) study which investigated innovative preventive practices and eco-efficient practices of small automotive garages in Spain. To successfully implement corporate environmentalism, employees and top management have to agree upon, coordinate, cooperate, and participate in all processes of materializing.

In addition, evidence supports a positive effect of technological capability on corporate environmentalism. Firms with higher environmental technological capability certainly have an ability to innovate and create new environmentally-friendly technology. This new technology abates the negative impact on the natural environment and replaces the current versions of technology.

This research successfully explains why firms embrace corporate environmentalism. Even though evidence from previous literature illustrated an unclear consequence of corporate environmentalism, Aragón-Correa et al. (2008) asserted that a positive relationship could be maintained. This research supports the positive relationship. Corporate environmentalism is perceived to have a positive impact on marketing performance, specifically an increase in market share, sales, and profit. However, it is noteworthy to mention that for firms perceiving both environmental market and environmental regulation as highly uncertain at the same time, the positive influence of corporate environmentalism on marketing performance is not confirmed. This may explain the mixed results of the economic performance of corporate environmentalism as found in the previous literature.

As evidenced in the current research, corporate environmentalism results in an advancement of social performance where social performance encompasses firms' relationships with their employees and the neighboring community. The result is

consistent with Turker's (2009) findings. Turker (2009) found that CSR was a predictor of employees' organizational commitment. Nevertheless, CSR in Turker (2009) includes a wide range of CSR activities, ranging from natural environmental concerns and concerns for future generations to tax payments. This research focuses exclusively on natural environmental concerns. Taking these concerns into business decision making, evidently, enhances the social performance of firms. Finally, this current research evidences the link between corporate environmentalism and environmental performance.

6.2. Theoretical Implications

The current research extends the literature on perceived uncertainty of business environmental factors and on the social performance and marketing performance of corporate environmentalism.

This research provides evidence supporting Song and Montoya-Weiss's (2001) assertion that specific elements of environment uncertainty, rather than a business environmental uncertainty in general, be studied in order to better understand the effect. In other words, the nature of the effect of perceived uncertainty depends on the source of the uncertainty. Results of this research reveal that the effect of perceived market uncertainty on corporate environmentalism differs from the effect of perceived regulation uncertainty. In the context of corporate environmentalism, perceived market uncertainty has a negative direct, but very small, effect and has no moderating effect at all. Meanwhile perceived regulation uncertainty has a moderating effect, but not a direct effect. The post-hoc analysis further shows that perceived regulation uncertainty has a varied effect on corporate environmentalism, depending on firms' business activities: the level of OEM production. Perceived regulation uncertainty has a positive effect in the high OEM group and a negative effect in the low OEM group. Thus, in order to correctly understand the effect of perceived uncertainty of business environment, the source of the perceived uncertainty should be identified and studied specifically.

The link between corporate environmentalism and social performance is successfully quantified in this research. While marketing (or economic) performance of corporate environmentalism has been widely studied and environmental performance is intuitive, only a few case studies have suggested the social performance of corporate environmentalism. For example, Lamming et al. (1999: page 186) argued that "it is likely that a strategy based on environmental soundness will have a major and beneficial impact on social justice without specifically targeting it." This research provides evidence supporting the notion. Note that the definition of social performance encompasses relationships between firms and such direct stakeholders as employees and the neighboring community.

Previous literature on corporate environmentalism found a mixed result of corporate environmentalism on economic performance: a positive influence, a negative influence, and no relationship have been found. This research found supporting evidence for a positive influence of corporate environmentalism. Moreover, results from the supplementary findings of this research possibly explain the mixed results in the previous literature. Marketing performance of corporate environmentalism is not confirmed in the sample firms with a high market uncertainty and a high regulation uncertainty but the performance is supported in the sample firms with a low market uncertainty and a low regulation uncertainty. The moderating effect of perceived market and regulation uncertainty is a possible explanation as to why previous studies on corporate environmentalism found a mixed result of the marketing (economic) performance of corporate environmentalism.

6.3. Managerial Implications

Results of this research provide a guideline for managers and practitioners. Employees' involvement in corporate environmentalism and firms' ability to innovate environmental technology are two important factors having a positive influence on the success of implementing corporate environmentalism. It is recommended that firms seek coordination, co-operation, and participation from employees. It is beneficial that employees become involved in corporate environmentalism from the early stage of

setting targets. Targets for corporate environmentalism, shared and committed to by employees and management, direct decisions on resource allocation and environmentalism implementation across departments so that decisions and executions serve the same set goals.

In addition to the involvement of employees, it is recommended that firms invest in the development of environmental technology. Corporate environmentalism requires environmentally-friendly technology. Technology is not limited to tools and equipment; it encompasses operating procedures or processes (Shrivastava, 1995). The capability of firms to innovate environmental technology is essential to successfully implement corporate environmentalism.

Costs are certainly involved in implementing corporate environmentalism. However, this research provides evidence that investment in and implementing corporate environmentalism can enhance firms' performance. Economically, corporate environmentalism improves sales, market share, and profit. Corporate environmentalism improves relationships between firms and employees as well as the neighboring community. Corporate environmentalism certainty enhances environmental performance of firms. Corporate environmentalism improves all three dimensions of firms' performance, moving toward corporate sustainability.

6.4. Suggestions for Policy Makers

Policy makers play a major role in encouraging corporate environmentalism. From its definition, perceived regulation uncertainty means that regulation is perceived as complicated, ambiguous, often changing, or changing in an unpredictable way. The current research evidences that regulation, if perceived as uncertain, has a positive, negative, and moderating effect. This research agrees with Feiock and Stream's (2001) and Porter and van der Linde's (1996b) notion that environmental regulation should be simple, clear, and stable. In other words, it should be perceived as "certain." The question that what a "simple, clear, and stable" or "certain" regulation looks like is out of the scope of this research; however, the

following discusses Feiock and Stream's (2001) and Porter and van der Linde's (1996b) notion which supports a simple, clear and stable regulation.

Feiock and Stream (2001: page 315) contended that environmental regulation should be "clear, stable, and certain…. States with stringent [environmental] regulation but stable and certain patterns and processes of regulation may have some hope of enjoying a growing economy as well as the social and environmental benefits resulting from regulation." A clear and stable regulation induces investments "because returns on investments are more predictable" (Feiock and Stream, 2001: page 315).

Porter and van der Linde (1996b) provided guidelines for "innovation-friendly regulation." One of the principles provided is that government should "make the regulation process more stable and predictable…. [Consequently,] industry can lock in and tackle root-cause solutions instead of hedging against the next twist or turn in government philosophy" (Porter and van der Linde, 1996b: page 124). A well-designed environmental regulation encourages environmentally-friendly innovation, resource efficiency, and competitive advantage (Porter and van der Linde, 1996b). Combining Feiock and Stream's (2001) and Porter and van der Linde's (1996b) arguments with results of this current research, it can be asserted that environmental technological capability is an important factor in firms' implementing corporate environmentalism. Policy makers can assist firms to implement corporate environmentalism by making environmental regulation simple, clear, stable, but stringent. With this kind of regulation, firms are induced to innovate and to invest in environmentally-friendly technology and are encouraged to develop and to improve their environmental technological capability.

In turn, environmentally-friendly technology possibly to stimulate or create demand for environmentally-friendly products (Shrivastava, 1995). Organic foods, eco-cars, hybrid cars, energy-saving appliances are examples of environmentally-friendly products that are well-accepted by markets. Thus, it can be said that policy

makers indirectly influence demand for environmentally-friendly products through well-designed, innovation-friendly regulation.

Nevertheless, environmentally-friendly innovation and environmental technological capability are created with costs, time, and talent. Once spent, these investment costs are not retrievable. Government can motivate firms to innovate environmental technology by alleviating the costs, for example, through tax incentives. The innovated environmentally-friendly technology not only benefits the firms themselves but also benefits society as well as abating the negative impacts on the natural environment.

In conclusion, policy makers can indirectly influence corporate environmentalism by enacting simple, clear, and stable regulation and/or directly stimulating corporate environmentalism by providing incentives for firms who invest in environmental technology.

6.5. Limitations

The focal construct in this research, corporate environmentalism, is vulnerable to social desirability bias. Measures were taken to prevent the adverse consequences of such bias. First, the questionnaire was carefully written and pretested to lessen the bias. Second, this research uses a corporate environmentalism scale which was developed and the social desirability bias of which was assessed by Banerjee (2002). Banerjee (2002) pointed out that the social desirability bias of the construct seemed to be insignificant.

However, the construct was initially tested in developed countries and in English whereas the current research was conducted in a developing country and the scale was translated into the local language. Even though the test results on the measurement model and construct validity in general are satisfactory, the loading of external environmental orientation to corporate environmentalism seems to be problematic.

Igalens and Gond (2005) summarized types of measurements possibly employed in research on corporate social performance (CSP). The summarization includes perceptual measurement and objective measurement conducted by an independent entity (third party). Measuring constructs by an independent entity possibly reduces social desirability bias on the scales (i.e., corporate environmentalism). In addition to the corporate environmentalism construct, other constructs are also vulnerable to the bias, for example, marketing, social, and environmental performance outcomes or technological capability of firms. It is possible to use perceptual or objective measurement by a third party to reduce such potential bias when examining these constructs.

Yet, measurements by an independent third party are not free from drawbacks. Perceptual measurement is subject to a halo effect (Igalens and Gond, 2005). Note that halo effect is an "influence of a global attributes on evaluations of individual attributes of a person" Nisbett and Wilson (1977: page 250). Existence and availability of objective measurement of the interested constructs are the major problem. Furthermore, the measurement may not be applicable to all kinds of firms (Igalens and Gond, 2005).

6.6. Suggestions for Future Research

Although the current research successfully demonstrates the associations between corporate environmentalism and its three performance outcomes, it is suggested that future research examines how corporate environmentalism enhances, specifically, marketing and social performance. Morgan and Hunt's (1994) commitment-trust theory of relationship marketing argued that firms developed their relationships with various business partners, such as suppliers, competitors, customers, employees, etc. A better understanding of such questions as how corporate environmentalism influences these relationships is worth scholarly investigation.

6.7. Conclusion

In closing, whether corporate environmentalism is a strategy or business ethic, corporate environmentalism reflects firms' attempts to move forward to corporate sustainability. In doing so, employees' involvement and participation across departments and at all rank within firms, together with an advancement of firms' technological capability are required. Corporate environmentalism leads to an improvement in firms' marketing, social, and environmental performance, when marketing performance refers to sales, market share, and profit, and social performance means the maintenance of firms' relationships with employees and the neighboring community. Policy makers also have a crucial role in promoting corporate environmentalism. Clear, predictable, and stable regulation increases certainty; thus, firms are induced to invest in environmentally-friendly technology because return on the investment is expectable. This research evidences that corporate environmentalism enhances not only firms' wealth and health but also that of the society in which firms operate.

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APPENDICES

APPENDIX A

คณะพาณิชยศาสตร์และการบัญชี
จุฬาลงกรณ์มหาวิทยาลัย

ถนนพญาไท กรุงเทพฯ 10330
โทรสาร 02-2541824

2 ตุลาคม 2552

เรื่อง ขอความร่วมมือในการตอบแบบสอบถาม
เรียน ท่านผู้ประกอบการ/ท่านผู้บริหาร

กระผม นายอภิชาติ คณารัตนวงศ์ นิสิตในหลักสูตรปริญญาเอก สาขาวิชาการตลาด จุฬาลงกรณ์มหาวิทยาลัย กำลังทำดุษฎีนิพนธ์ปริญญาเอกเรื่อง ***"ตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กร: ผลกระทบของการรับรู้ความไม่แน่นอนของตลาดที่มีต่อผลประกอบการด้านการตลาด ความเป็นมิตรต่อสังคมและสิ่งแวดล้อมองค์กร"*** (The Model of Corporate Environmentalism: the Effects of Perceived Market Uncertainty upon Social, Environmental, and Marketing Performance) คณะกรรมการดุษฎีนิพนธ์ มีดังนี้

ประธานกรรมการ	ดร.ศักดิ์สิทธิ์ ศรีเดช	ปลัดกระทรวงทรัพยากรธรรมชาติและสิ่งแวดล้อม
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร.กุณฑลี รื่นรมย์	จุฬาลงกรณ์มหาวิทยาลัย
กรรมการ	ศาสตราจารย์กิตติคุณ ดร.นงลักษณ์ วิรัชชัย	จุฬาลงกรณ์มหาวิทยาลัย
กรรมการ	รองศาสตราจารย์ ดร.ประดิษฐ์ วรรณรัตน์	สถาบันบัณฑิตพัฒนบริหารศาสตร์ (นิด้า)
กรรมการ	รองศาสตราจารย์ จร.โอรส ลีลากุลธนิต	สถาบันบัณฑิตพัฒนบริหารศาสตร์ (นิด้า)
กรรมการ	ผู้ช่วยศาสตราจารย์ ดร.สุทธิศักดิ์ ไกรศรสุทธาลินี	มหาวิทยาลัยธรรมศาสตร์

ในฐานะที่ท่านเป็นผู้ประกอบการ/ผู้บริหารที่มีประสบการณ์ ความชำนาญ และความรู้ในการบริหารธุรกิจและเป็นผู้นำองค์กรท่ามกลางสภาวะแวดล้อมที่มีการเปลี่ยนแปลงอย่างมากทั้งทางเศรษฐกิจ การเมือง สังคมและสิ่งแวดล้อมทางธรรมชาติ ดังนั้น กระผมใคร่ขอความร่วมมือจากท่านโปรดกรุณาสละเวลาตอบแบบสอบถามที่แนบมาด้วยพร้อมกับจดหมายฉบับนี้

งานวิจัยเรื่องนี้เป็นประโยชน์อย่างยิ่งในการดำเนินธุรกิจในอนาคต ผลวิจัยที่ได้จะเป็นแนวทางในการตัดสินใจกำหนดนโยบายด้านสิ่งแวดล้อมของท่านผู้ประกอบการ **ข้อมูลที่ท่านตอบในแบบสอบถามทั้งหมดจะถูกเก็บรักษาไว้เป็นความลับและใช้ในการวิเคราะห์เท่านั้น** งานวิจัยเรื่องนี้มีวัตถุประสงค์ที่จะพัฒนาความรู้ทางทฤษฎี และนำผลวิจัยไปใช้ในการดำเนินธุรกิจที่ต้องคำนึงถึงการทำงานที่เป็นมิตรกับสิ่งแวดล้อมต่อไปในอนาคต ดังนั้น **ข้อมูลที่ตรงกับสภาพความเป็นจริงมีความสำคัญอย่างยิ่ง**

เพื่อแสดงความขอบคุณในความร่วมมือของท่าน กรุณาแนบนามบัตรหรือเขียนชื่อ-ที่อยู่ของท่านในแบบสอบถามแล้วส่งกลับคืนมายังกระผมด้วยซองจดหมายที่ชำระค่าไปรษณีย์เรียบร้อยแล้ว**ภายในวันที่ 22 ตุลาคม 2552** กระผมจะได้จัดส่ง**รายงานสรุปผลวิจัย**ให้แก่ท่านหลังจากงานวิจัยเสร็จสิ้นแล้ว เพื่อท่านจะได้นำไปใช้ประโยชน์ในธุรกิจของท่านต่อไป กระผมขอขอบพระคุณล่วงหน้าเป็นอย่างสูงในความร่วมมือของท่าน หากท่านมีข้อเสนอแนะหรือคำถามใดๆ กรุณาติดต่อได้ที่หมายเลขโทรศัพท์ 084-458-0111 หรือ kanaratt@yahoo.com

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จุฬาลงกรณ์มหาวิทยาลัย

APPENDIX B

หอการค้าไทย
THE THAI CHAMBER OF COMMERCE
สภาหอการค้าแห่งประเทศไทย
BOARD OF TRADE OF THAILAND

ที่ สคช/ว.045 /2552

กรกฎาคม 2552

เรื่อง ขอความร่วมมือในการตอบแบบสอบถาม

เรียน ท่านผู้ประกอบการ

เนื่องด้วย นายอภิชาติ คณารัตนวงศ์ นิสิตในหลักสูตรปริญญาเอก สาขาวิชาการตลาด จุฬาลงกรณ์มหาวิทยาลัย กำลังทำดุษฎีนิพนธ์เรื่อง "ตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กร : ผลกระทบของการรับรู้ความไม่แน่นอนของตลาด ที่มีต่อผลการดำเนินงานด้านสังคม สิ่งแวดล้อมและการตลาดขององค์กร" (The Model of Corporate Environmentalism : the Effects of Perceived Market Uncertainty upon Social,Environmental,and Marketing Performance) เพื่อใช้เป็นประโยชน์ในด้านการศึกษาภาคดุษฎีบัณฑิตและเพื่อเป็นประโยชน์ให้ภาคธุรกิจ สมาชิกหอการค้าไทยสามารถนำไปกำหนดกลยุทธ์และการตัดสินใจในทางธุรกิจที่เหมาะสมต่อไป

หอการค้าไทย พิจารณาเห็นว่าการวิจัยเกี่ยวกับการเปลี่ยนแปลงของสิ่งแวดล้อมทางธรรมชาติกับการดำเนินธุรกิจในปัจจุบันมีความสำคัญอย่างยิ่งต่อผู้ประกอบธุรกิจของภาคเอกชน ภาคอุตสาหกรรม ผู้ประกอบการและผู้บริหารองค์กรธุรกิจ ผลวิจัยจะเป็นแนวทางในการกำหนดกลยุทธ์และการตัดสินใจเชิงกลยุทธ์ของท่านผู้ประกอบการ ดังนั้นจึงใคร่ขอความร่วมมือจากท่านผู้ประกอบการตอบแบบสอบถามที่มีมาพร้อมนี้ และขอความกรุณาส่งแบบสอบถามกลับไปยัง นายอภิชาติ คณารัตนวงศ์ ด้วยจักขอบคุณยิ่ง

จึงเรียนมาเพื่อโปรดพิจารณา

ขอแสดงความนับถือ

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APPENDIX C

แบบสอบถามท่านผู้ประกอบการ/ผู้บริหาร
เรื่อง "ตัวแบบการตระหนักถึงสิ่งแวดล้อมขององค์กร: ผลกระทบของการรับรู้ความไม่แน่นอนของตลาด ที่มีต่อผลประกอบการด้านการตลาด ความเป็นมิตรต่อสังคมและสิ่งแวดล้อมขององค์กร"

ส่วนที่ 1 กรุณาทำเครื่องหมาย (X) ที่ตรงกับระดับความเห็นของท่านที่มีต่อข้อความด้านล่าง

สินค้าที่เป็นมิตรกับสิ่งแวดล้อม หมายถึง สินค้าที่ผลิตจากวัตถุดิบที่ไม่เป็นพิษกับสิ่งแวดล้อม ด้วยกระบวนการผลิตที่มีประสิทธิภาพ ใช้ทรัพยากรธรรมชาติอย่างประหยัด ไม่ทำลายสภาพแวดล้อม วิธีการใช้สินค้า/ของเหลือหลังการใช้สินค้าไม่ส่งผลเสียต่อสภาพแวดล้อม

	เห็นด้วยน้อยที่สุด	เห็นด้วยน้อย	เห็นด้วยปานกลาง	เห็นด้วยอย่างมาก	เห็นด้วยมากที่สุด
1.1. ท่านคิดว่า ลูกค้าและสภาพการแข่งขันของสินค้าที่เป็นมิตรกับสิ่งแวดล้อม (ตามคำจำกัดความข้างต้น) ในตลาดสินค้าที่บริษัทดำเนินกิจการอยู่เป็นอย่างไร					
1. การยอมรับสินค้าที่เป็นมิตรกับสิ่งแวดล้อมของลูกค้ามีความไม่แน่นอน	.....	.....	.....	.....	.....
2. ความต้องการซื้อสินค้าที่เป็นมิตรกับสิ่งแวดล้อมของลูกค้ามีทิศทางไม่ชัดเจน	.....	.....	.....	.....	.....
3. มีสินค้ามากรายจำหน่ายแข่งกับสินค้าของบริษัทท่าน	.....	.....	.....	.....	.....
4. ความเคลื่อนไหวของบริษัทคู่แข่งต่อสินค้าที่เป็นมิตรกับสิ่งแวดล้อมมีทิศทางไม่ชัดเจน	.....	.....	.....	.....	.....
5. การประเมินสภาพการแข่งขันของสินค้าที่เป็นมิตรกับสิ่งแวดล้อมทำได้ยาก	.....	.....	.....	.....	.....

กฎหมายสิ่งแวดล้อม หมายถึง กฎหมาย ระเบียบ ข้อบังคับของภาครัฐ เพื่อควบคุม ดูแลและกระตุ้นให้องค์กรธุรกิจใช้ทรัพยากรธรรมชาติอย่างมีประสิทธิภาพ และลดผลเสียที่เกิดกับสภาพแวดล้อมทางธรรมชาติ

	เห็นด้วยน้อยที่สุด	เห็นด้วยน้อย	เห็นด้วยปานกลาง	เห็นด้วยอย่างมาก	เห็นด้วยมากที่สุด
1.3. ท่านคิดว่า กฎหมายสิ่งแวดล้อม (ตามคำจำกัดความข้างต้น) ในตลาดสินค้าที่บริษัทดำเนินกิจการอยู่เป็นอย่างไร					
1. กฎหมายสิ่งแวดล้อมที่ใช้บังคับอยู่ในปัจจุบันมีความซับซ้อน เข้าใจยาก	.....	.....	.....	.....	.....
2. มาตรการภาษีของรัฐ (เช่น การจัดเก็บ/ยกเว้นภาษีต่าง ๆ) เพื่อกระตุ้นให้บริษัทดำเนินการที่เป็นมิตรกับสิ่งแวดล้อมมีความไม่ชัดเจน	.....	.....	.....	.....	.....
3. ทิศทางกฎหมายสิ่งแวดล้อมที่จะออกใช้บังคับในอนาคตเปลี่ยนแปลงอยู่ตลอดเวลา	.....	.....	.....	.....	.....
4. เป็นการยากที่จะคาดการณ์ผลที่ตามมาของกฎหมายสิ่งแวดล้อมที่มีต่อการดำเนินธุรกิจของบริษัท	.....	.....	.....	.....	.....
5. การบังคับใช้กฎหมายเพื่อสิ่งแวดล้อมมีความไม่แน่นอน	.....	.....	.....	.....	.....

ส่วนที่ 2

ความเป็นมิตรกับสิ่งแวดล้อมของบริษัท หมายถึง การนำเรื่องการอนุรักษ์สิ่งแวดล้อมทางธรรมชาติเข้าไปเป็นอีกปัจจัยหนึ่งที่ต้องคำนึงถึงในการตัดสินใจดำเนินธุรกิจของบริษัท เช่น การตัดสินใจเกี่ยวกับการผลิต การเลือกเทคโนโลยีการผลิต วัตถุดิบ การบริหารงานทั่วไป การตลาด การโฆษณาประชาสัมพันธ์ การลงทุน เป็นต้น

	เห็นด้วยน้อยที่สุด	เห็นด้วยน้อย	เห็นด้วยปานกลาง	เห็นด้วยอย่างมาก	เห็นด้วยมากที่สุด
2.1. ความสัมพันธ์ระหว่างผู้บริหารระดับสูงของบริษัทกับผู้เชี่ยวชาญด้านสิ่งแวดล้อมภายนอกบริษัทเป็นอย่างไร					
1. ผู้บริหารระดับสูงรู้จักกับผู้เชี่ยวชาญภายนอกบริษัทที่มีความรู้ดีในเรื่องความเป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
2. ผู้บริหารระดับสูงมีความสัมพันธ์อันดีกับผู้เชี่ยวชาญภายนอกบริษัทที่มีความรู้ดีในเรื่องความเป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
3. ผู้บริหารระดับสูงแลกเปลี่ยนข้อมูล/ความรู้กับผู้เชี่ยวชาญภายนอกบริษัทเกี่ยวกับสถานการณ์และทิศทางอนาคตของความเป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
4. ผู้บริหารระดับสูงได้รับคำแนะนำจากผู้เชี่ยวชาญภายนอกบริษัทเกี่ยวกับการจัดการและดำเนินการที่เป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....

	เห็นด้วยน้อยที่สุด	เห็นด้วยน้อย	เห็นด้วยปานกลาง	เห็นด้วยอย่างมาก	เห็นด้วยมากที่สุด
2.2. พนักงานในบริษัทมีส่วนร่วมในเรื่องความเป็นมิตรกับสิ่งแวดล้อมเพียงใด					
1. พนักงานทุกคนรู้เป้าหมายในเรื่องความเป็นมิตรกับสิ่งแวดล้อมของบริษัท	.....	.....	.....	.....	.....
2. พนักงานมีส่วนร่วมในการกำหนดเป้าหมายและการดำเนินการที่เป็นมิตรกับสิ่งแวดล้อมของบริษัท	.....	.....	.....	.....	.....
3. พนักงานในทุกระดับมีโอกาสนำเสนอแนวทางการดำเนินการที่เป็นมิตรกับสิ่งแวดล้อมให้แก่ผู้บริหาร	.....	.....	.....	.....	.....

การจัดการและเทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อม หมายถึง ความสามารถในการจัดการ การใช้เทคโนโลยี/เครื่องจักร/อุปกรณ์ อันนำไปสู่ การลดการใช้ทรัพยากรธรรมชาติ การลดหรือป้องกันผลเสียที่เกิดกับสภาพแวดล้อมทางธรรมชาติจากการดำเนินงานของบริษัท

	เห็นด้วยน้อยที่สุด	เห็นด้วยน้อย	เห็นด้วยปานกลาง	เห็นด้วยอย่างมาก	เห็นด้วยมากที่สุด
2.3. การจัดการและเทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อมของบริษัทเป็นอย่างไร					
1. บริษัทมีการลงทุนวิจัยและพัฒนาเทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
2. บริษัทมีประสบการณ์และความสามารถในการดำเนินการที่เป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
3. บริษัทสนับสนุนให้พนักงานเพิ่มเติมความรู้/ความสามารถทางเทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
4. เทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อมของบริษัทอยู่ในระดับชั้นนำ	.....	.....	.....	.....	.....
5. บริษัทคาดการณ์ทิศทางของเทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อมได้อย่างถูกต้อง	.....	.....	.....	.....	.....
6. บริษัทสามารถใช้เทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อมมาแก้ปัญหาต่างๆ ในการดำเนินงานอย่างได้ผล	.....	.....	.....	.....	.....
7. บริษัทสามารถผสมผสานความรู้และเทคโนโลยีที่เป็นมิตรกับสิ่งแวดล้อมจากภายนอกและภายในบริษัทได้อย่างมีประสิทธิภาพ	.....	.....	.....	.....	.....
2.4. ข้อความใดตรงกับลักษณะความเป็นมิตรกับสิ่งแวดล้อมของบริษัทท่าน					
1. บริษัทพยายามให้พนักงานทุกระดับเข้าใจถึงการอนุรักษ์สิ่งแวดล้อมทางธรรมชาติ	.....	.....	.....	.....	.....
2. บริษัทมีนโยบายที่ชัดเจนในการอนุรักษ์สิ่งแวดล้อมทางธรรมชาติ	.....	.....	.....	.....	.....
3. บริษัทผลักดันการอนุรักษ์สิ่งแวดล้อมทางธรรมชาติให้อยู่ในทุกการตัดสินใจในการดำเนินงานของบริษัท	.....	.....	.....	.....	.....
4. การอนุรักษ์สิ่งแวดล้อมทางธรรมชาติเป็นหนึ่งในวัฒนธรรมองค์กรของบริษัท	.....	.....	.....	.....	.....
5. การรักษาสภาพแวดล้อมทางธรรมชาติเป็นหนึ่งในความรับผิดชอบของบริษัทที่มีต่อสังคม	.....	.....	.....	.....	.....
6. บริษัทมีภาพลักษณ์ที่ดีในการรักษาสภาพแวดล้อมทางธรรมชาติ	.....	.....	.....	.....	.....
7. บริษัทเห็นว่า การอนุรักษ์สิ่งแวดล้อมทางธรรมชาติมีความสำคัญมากกว่าลูกค้า ผู้ถือหุ้นและพนักงาน	.....	.....	.....	.....	.....
8. บริษัทเห็นว่า การเปลี่ยนแปลงของสภาพแวดล้อมทางธรรมชาติมีผลกระทบต่อการดำเนินธุรกิจของบริษัท	.....	.....	.....	.....	.....
9. บริษัทเห็นว่า การอนุรักษ์สิ่งแวดล้อมทางธรรมชาติเป็นทั้งโอกาสและอุปสรรคทางธุรกิจของบริษัท	.....	.....	.....	.....	.....
2.5. กลยุทธ์องค์กรของบริษัทคำนึงถึงความเป็นมิตรต่อสิ่งแวดล้อมเพียงใด					
1. ในการตัดสินใจเกี่ยวกับกลยุทธ์องค์กร บริษัทคำนึงถึงผลกระทบที่จะเกิดขึ้นกับสภาพแวดล้อมทางธรรมชาติด้วยเสมอ	.....	.....	.....	.....	.....
2. คำว่า "คุณภาพสินค้า" หมายถึง สินค้าและการผลิตสินค้าที่เป็นมิตรกับสิ่งแวดล้อม	.....	.....	.....	.....	.....
3. เป้าหมายหนึ่งของกลยุทธ์องค์กร คือ การอนุรักษ์ทรัพยากรธรรมชาติ	.....	.....	.....	.....	.....
4. ทุกครั้งที่มีการพัฒนาสินค้าใหม่ บริษัทคำนึงเสมอว่าสินค้านั้นเป็นมิตรกับสิ่งแวดล้อมเพียงใด	.....	.....	.....	.....	.....

	เห็นด้วยน้อยที่สุด	เห็นด้วยน้อย	เห็นด้วยปานกลาง	เห็นด้วยอย่างมาก	เห็นด้วยมากที่สุด
2.6. กลยุทธ์การตลาดของบริษัทคำนึงถึงความเป็นมิตรต่อสิ่งแวดล้อมเพียงใด					
1. ความเป็นมิตรต่อสิ่งแวดล้อมของสินค้าถูกหยิบยกมาเป็นประเด็นหลักในการโฆษณา	.....	.....	.....	.....	.....
2. ความเป็นมิตรต่อสิ่งแวดล้อมของบริษัทถูกหยิบยกมาเป็นประเด็นในการประชาสัมพันธ์	.....	.....	.....	.....	.....
3. ความเป็นมิตรต่อสิ่งแวดล้อมมีความสำคัญต่อทิศทางการตลาดในอนาคตของบริษัท	.....	.....	.....	.....	.....
4. ความเป็นมิตรต่อสิ่งแวดล้อมมีความสำคัญต่อการแนะนำสินค้าใหม่เข้าตลาด	.....	.....	.....	.....	.....

ส่วนที่ 3

3.1. หากบริษัทได้เคยมีการดำเนินการใด ๆ อันเป็นมิตรกับสิ่งแวดล้อมแล้ว ผลประกอบการโดยรวมในด้านต่าง ๆ ต่อไปนี้ของบริษัทอยู่ในระดับใด เมื่อเทียบกับความคาดหมาย

	ต่ำกว่าที่คาดหมายมาก	ต่ำกว่าคาดหมายเล็กน้อย	เป็นไปตามคาดหมาย	เกินกว่าคาดหมายเล็กน้อย	เกินกว่าคาดหมายมาก	ไม่เปลี่ยนแปลงใด ๆ	ไม่ทราบ
ด้านการตลาด							
1. ยอดขาย	.....	.....	.....	.....	.....	.....	.....
2. ส่วนแบ่งตลาด	.....	.....	.....	.....	.....	.....	.....
3. กำไร	.....	.....	.....	.....	.....	.....	.....
ด้านสินค้า							
1. ความปลอดภัยของสินค้า	.....	.....	.....	.....	.....	.....	.....
2. ความเป็นมิตรกับสิ่งแวดล้อมของสินค้า	.....	.....	.....	.....	.....	.....	.....
ด้านพนักงานและชุมชนใกล้เคียง							
1. ความรู้สึกของพนักงานที่มีต่อบริษัท	.....	.....	.....	.....	.....	.....	.....
2. สภาพแวดล้อมในสถานที่ทำงาน	.....	.....	.....	.....	.....	.....	.....
3. ความสัมพันธ์กับชุมชนใกล้เคียงบริษัท/โรงงาน	.....	.....	.....	.....	.....	.....	.....
การใช้ทรัพยากร พลังงานและการกำจัดของเสีย							
1. ประสิทธิภาพในการใช้วัตถุดิบ	.....	.....	.....	.....	.....	.....	.....
2. การลดการใช้พลังงานและน้ำ	.....	.....	.....	.....	.....	.....	.....
3. การลดการใช้วัสดุสิ้นเปลือง	.....	.....	.....	.....	.....	.....	.....
4. การลดปริมาณขยะ มลพิษ สารพิษ	.....	.....	.....	.....	.....	.....	.....
5. ประสิทธิภาพในการจัดการขยะ สารพิษ มลพิษ	.....	.....	.....	.....	.....	.....	.....
6. การลดการปล่อยก๊าซเรือนกระจก	.....	.....	.....	.....	.....	.....	.....

ส่วนที่ 4

4.1. บริษัทท่านอยู่ในกลุ่มอุตสาหกรรมใดต่อไปนี้

.....อาหาร (อาหารแช่แข็ง แปรรูป ส่วนประกอบ เป็นต้น) .....ยานยนต์ ชิ้นส่วนยานยนต์ แม่พิมพ์

.....ไฟฟ้าและอิเลคทรอนิคส์ .....สิ่งทอ เครื่องนุ่งห่ม (ถัก ทอ ฟอก ย้อม เป็นต้น)

.....อื่น ๆ โปรดระบุ.....

4.2. บริษัทท่านดำเนินกิจกรรมใดต่อไปนี้บ้าง (ตอบได้มากกว่า 1 ข้อ)

.....ผู้ผลิต (Manufacturer/Producer) .....ผู้จัดจำหน่าย (Distributor)

.....ผู้นำเข้า (Importer) .....ผู้ส่งออก (Exporter)

.....อื่น ๆ โปรดระบุ.....

4.3 ในจำนวนสินค้าทั้งหมดที่บริษัทผลิต เป็นสินค้าที่เป็นมิตรกับสิ่งแวดล้อมที่ผลิตตามคำสั่งของลูกค้า (OEM) คิดเป็นประมาณ ..... เปอร์เซ็นต์ (%)

4.4. ตำแหน่งปัจจุบันของท่านในบริษัท.....

4.5. บริษัทท่านมีพนักงานประจำ (รวมพนักงานทุกระดับในโรงงาน) ประมาณ ..... คน

4.6. ยอดขายของบริษัทในปี 2551 ที่ผ่านมา มีมูลค่าประมาณ

.....น้อยกว่า 10 ล้านบาท .....10 – 50 ล้านบาท

..... 50 – 100 ล้านบาท .....100 – 500 ล้านบาท

..... 500 - 1,000 ล้านบาท .....1,000 – 2,500 ล้านบาท

..... 2,500 – 5,000 ล้านบาท .....มากกว่า 5,000 ล้านบาท

4.7. บริษัทท่านเป็นบริษัทสาขา/บริษัทลูก/หรือบริษัทร่วมทุนกับบริษัทต่างชาติหรือไม่

.....ใช่ (กรุณา**ทำ**ข้อ 4.8 และกรอกข้อมูลในกรอบสี่เหลี่ยมด้านล่าง)

.....ไม่ใช่ (กรุณา**ข้าม**ข้อ 4.8 ไปกรอกข้อมูลในกรอบสี่เหลี่ยมด้านล่าง)

4.8. ท่านคิดว่า สัดส่วนการตัดสินใจระหว่างบริษัทท่านและบริษัทแม่ในเรื่องต่าง ๆ ต่อไปนี้อยู่ระดับใด

สัดส่วนในการตัดสินใจ						
บริษัทแม่ →	100 %	75 %	50 %	25 %	0 %	ไม่ทราบ
บริษัทตัดสินใจเอง →	0 %	25 %	50 %	75 %	100 %	
1. ขั้นตอนการผลิต/กระบวนการผลิต	.....	.....	.....	.....	.....	.....
2. เทคโนโลยีการผลิต	.....	.....	.....	.....	.....	.....
3. การเลือกใช้วัตถุดิบ/ส่วนประกอบของสินค้า	.....	.....	.....	.....	.....	.....
4. การออกแบบสินค้า (product design)	.....	.....	.....	.....	.....	.....
5. การตั้งราคา	.....	.....	.....	.....	.....	.....
6. การโฆษณาประชาสัมพันธ์	.....	.....	.....	.....	.....	.....
7. นโยบายเป็นมิตรต่อสิ่งแวดล้อม	.....	.....	.....	.....	.....	.....
8. การจัดการที่เป็นมิตรต่อสิ่งแวดล้อมของบริษัท	.....	.....	.....	.....	.....	.....
9. อื่นๆ โปรดระบุ_____	.....	.....	.....	.....	.....	.....

เพื่อแสดงความขอบคุณในความร่วมมือตอบแบบสอบถามของท่าน กรุณาแนบนามบัตรมาพร้อมกับแบบสอบถามหรือเขียน ชื่อ-ที่อยู่ด้านล่าง เพื่อผู้วิจัยจะได้จัดส่งรายงานสรุปผลวิจัยให้แก่ท่าน หลังจากงานวิจัยเสร็จสิ้นเรียบร้อยแล้ว เพื่อประโยชน์ในการนำไปใช้ในการตัดสินใจของบริษัทท่านต่อไป

ชื่อ-สกุล.....

บริษัท.....

ที่อยู่.....

.....

โทรศัพท์.....โทรสาร.....

ข้อมูลทั้งหมดที่ได้รับจะถูกเก็บรักษาเป็นความลับและใช้สำหรับการวิเคราะห์เท่านั้น

ขอขอบพระคุณในความร่วมมือของท่านเป็นอย่างสูง

นายอภิชาติ คณารัตนวงศ์

นิสิตในหลักสูตรปริญญาเอก สาขาการตลาด

คณะพาณิชยศาสตร์และการบัญชี จุฬาลงกรณ์มหาวิทยาลัย

กรุณาส่งคืนแบบสอบถามด้วยซองจดหมายที่จ่าหน้าซองและชำระค่าไปรษณีย์เรียบร้อยแล้ว (ตามที่แนบมาด้วย)

หรือ Fax มาที่ 02-860-9192

APPENDIX D

List of Executives/Top Management

Institute	Executive/Top Management
Thailand Environment Institute	Professor Dr. Sanit Aksornkoae President
National Food Institute	Dr. Apiradee Khaodhiar Director, Department of Research and Intelligence Khun Rapeepron Suthatham Manager, Division of Information Services
The Industrial Environment Institute The Federation of Thai Industries	Khun Chaveng Chao Vice Chairman, Executive Environment Committee Assoc.Prof.Dr. Sombat Teekasap Vice Chairman, Executive Environment Committee Khun Panrat Phechpakdee Director
Electrical and Electronics Institute	Dr. Chirapat Popuang Director
Thailand Textile Institute	Khun Supot Lappradtana Director of Textile Information Center
Thailand Automotive Institute	Khun Wanlop Tiasiri Director
Automotive Industry Club The Federation of Thai Industries	Khun Piengjai Keawsuwan Chairman
Food Processing Industry Club The Federation of Thai Industries	Khun Paiboon Ponsuwanna Chairman

Biography

Apichart Kanarattanavong is a Bangkok native, born in August, 1965. He earned his first degree majoring in marketing from the Faculty of Commerce and Accountancy, Chulalongkorn University and a Master of Business Administration (MBA) majoring in international business (IBEAR), from the University of Southern California. Before his pursuing the doctoral degree, he worked in the real estate development business. He has had an exposure to the international property business, specifically, the real estate development in California, US and in Berlin, Germany.