

Relationship between firm's sustainability
strategic behaviour and performance: a
meta-analytic review and theoretical
integration

by

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AUTHOR'S DECLARATION

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

Most theories that attempt to describe the relationship between corporate sustainability strategies and a company's triple bottom line also make the assumption that there is insufficient evidence to produce generalizable conclusions. This study contributes to the overall body of knowledge, as there is a lack of significant generalizable knowledge on corporate sustainability strategies and a company's triple bottom line.

To provide a methodologically more rigorous review, we performed a meta-analysis on 18 scholarly articles from top-tier academic journals containing 64 experimental treatments that measured an observed (not self-reported) behavioural outcome, which yielded a sample size of 23,871 observations. Most studies combined multiple treatments, which preclude definitive conclusions on the most effective treatments.

The findings suggest that there is a positive medium to strong relationship between sustainability-oriented strategies, for both reactive and proactive behaviours (Dyllick et al., 1997; Gminder et al., 2002), and a company's "triple bottom line." Furthermore, regardless of the firm type (e.g., multinational corporation or local establishment, emerging economy firm or developed nation business), proactive sustainability-oriented strategies tend to have a higher payoff than firms that adopt reactive sustainability-oriented strategies. This meta-analysis establishes a greater degree of certainty with respect to corporate sustainability strategies and a firm's triple bottom line relationship than currently assumed by many business scholars.

To conclude, the sustainability concept has significantly expanded the scope of measuring organizational performance according to economic, social, and environmental components (Robins, 2006), which are collectively described as the “triple bottom line.” Organizations have determined that specific products and processes can have serious environmental and social implications beyond providing typical economic benefits (Sarkis, 2001). Based on the results of this study, companies should develop more diversified sustainability strategies that will help them to identify and capture value (McMullen, 2001). The results demonstrate that sustainability can provide companies with a strategic advantage, which is vital for the organization’s long-term viability and success (Orlitzky et al., 2003).

This study also examines the balance between reasonable return on investment and long-term organizational viability, which greatly impacts organizational decision-makers that contend with numerous stakeholder issues, pressure from environmental agencies, and increased social consciousness that affects workers, consumers, and communities. It supports the conclusion that being proactive in responding to these conflicting pressures and barriers helps organizations to achieve higher levels of performance.

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Last but not the least, my family and the one above all of us, the omnipresent God, for answering my prayers for giving me the strength to plod on despite my constitution wanting to give up and throw in the towel, thank you so much Dear Lord.

Dedication

I lovingly dedicate this thesis to my wonderful family. Particularly to my understanding and patient wife, Mona, who has put up with these many years of research, and supported me each step of the way. To our precious Son Anthony and Daughter Chantal, who are the joys of our lives.

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Chapter 1

1. Introduction

1.1 Background

Environmental crises, including nuclear disasters, air pollution, ozone depletion, acid rain, resource exhaustion, the greenhouse effect, and lack of biodiversity, are typically cross-national. The increasing severity of these problems has a definitive impact on the global economy; due to their ecological-social interdependence, scholars must examine organizations, as they perform a vital role in countering both the ecological and sociable harm caused by their operations.

In the 1960s, a global social movement that focused on environmental problems emerged, galvanized by Rachel Carson's book *Silent Spring* and later reinforced in the 1970s by the seminal report (written by the newly formed Club of Rome) "Limits to Growth – A blueprint for our common survival" (Meadows, 1972) and the book called "Blueprint for Survival" by Goldsmith et al. (1972). This movement triggered the 1972 UN Stockholm Conference on Environment and Development and the formation of the UN Environment Programme (UNEP).

In 1982, the UN General Assembly set up the World Commission on Environment and Development (WCED) as an "independent" assembly of high-level experts and federal government officials chaired by Norwegian Prime Minister Gro Harlem Brundtland. The commission developed a "global agenda with regard to change" and, more specifically, "proposed extensive environmental strategies for realizing sustainable development around the year 2000 and also beyond" (UNWCED, 1987). A report titled "My Common Future," launched in 1987 after three years of public hearings, is the most cited manuscript in sustainable development literature. Based on this report, "Sustainable development" will reconcile the environmental interests of the North with the stimulated needs of the South.

The notion remained defined as “meeting the needs of the present era without sacrificing the ability of future generations to be able to meet their own needs,” although this point was stated as far back as the 1960s; however, it became well-liked after Brundtland’s work. The report also explored the factors behind the growing equity gap between the rich and the poor and provided guidance so that sustainable development could be integrated into various national and international policy levels. Suggestions included supporting more development, saving and improving the resource supply, reorienting technologies, integrating environmental problems into decision-making, and strengthening international collaboration (UNWCED, 1987).

Today, businesses impact our life in many ways; their roles have changed from being just corporations to becoming more important and powerful players in all aspects of society. Furthermore, unaccountable business power is harmful to society, the structure of families and their lifestyles, and even the future of the planet (Mitchell and Sikka, 2005). Implementing the notion of sustainable development on business activities has become an important goal for policymakers. Consequently, more and more corporations are endeavouring to bring their business activities under the umbrella of corporate sustainability. Businesses and owners can use different methods to balance financial, ecological, and sociable ingredients in their own business models.

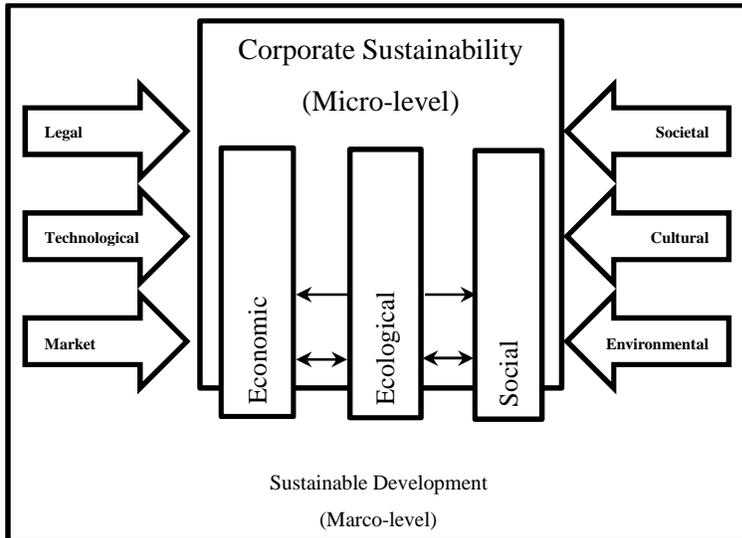
When community and political acquaintances ascertain that new organizational patterns and different types of enterprises dominate the corporate landscape, sustainability and sustainable development will become more important to organizations. Sustainability might be a priority when the company is founded, so it will incorporate sustainable development into the company’s pursuit statement. Sustainability might be as an ideal aspect of the company’s goals and work functions or it could gain importance due to the issuance of new regulations or business standards. Sustainable development might become a new source

of competitive advantage or it might provide the solution to a surprising crisis that paints the business as a polluter or sociable oppressor.

When these problems persist, firms begin to integrate patterns that consider how their products, services, and processes impact society and the environment. This integration encourages business owners and other members of corporations to feel more responsibility for safeguarding and preserving resources, which puts organizations on the path to recognizing that we share common resources. When we succeed or fail to promote sustainability, it is a collective effort. As a result, this encourages business operations to be more socially responsible and to help sustain development (Law and Gunasekaran, 2012).

Several scholars have questioned whether sustainable development affects business productivity. A key

Figure 1: Concept of sustainable development on a business level



Adapted from Ebner and Baumgartner (2006)

factor that counters the concept of “business sustainability” is the fact that sustainability is a system-wide level notion that does not coincide with corporate boundaries (Gray, 2010). However, several theoretical models consider the notion of corporate sustainability.

Ebner and Baumgartner (2006) state (see Figure 1) that the concept of sustainable development on a

business level is known as “corporate sustainability,” which is based on the three pillars of economical, ecological, and social issues. Corporate orientation on sustainability suffers from external effects because

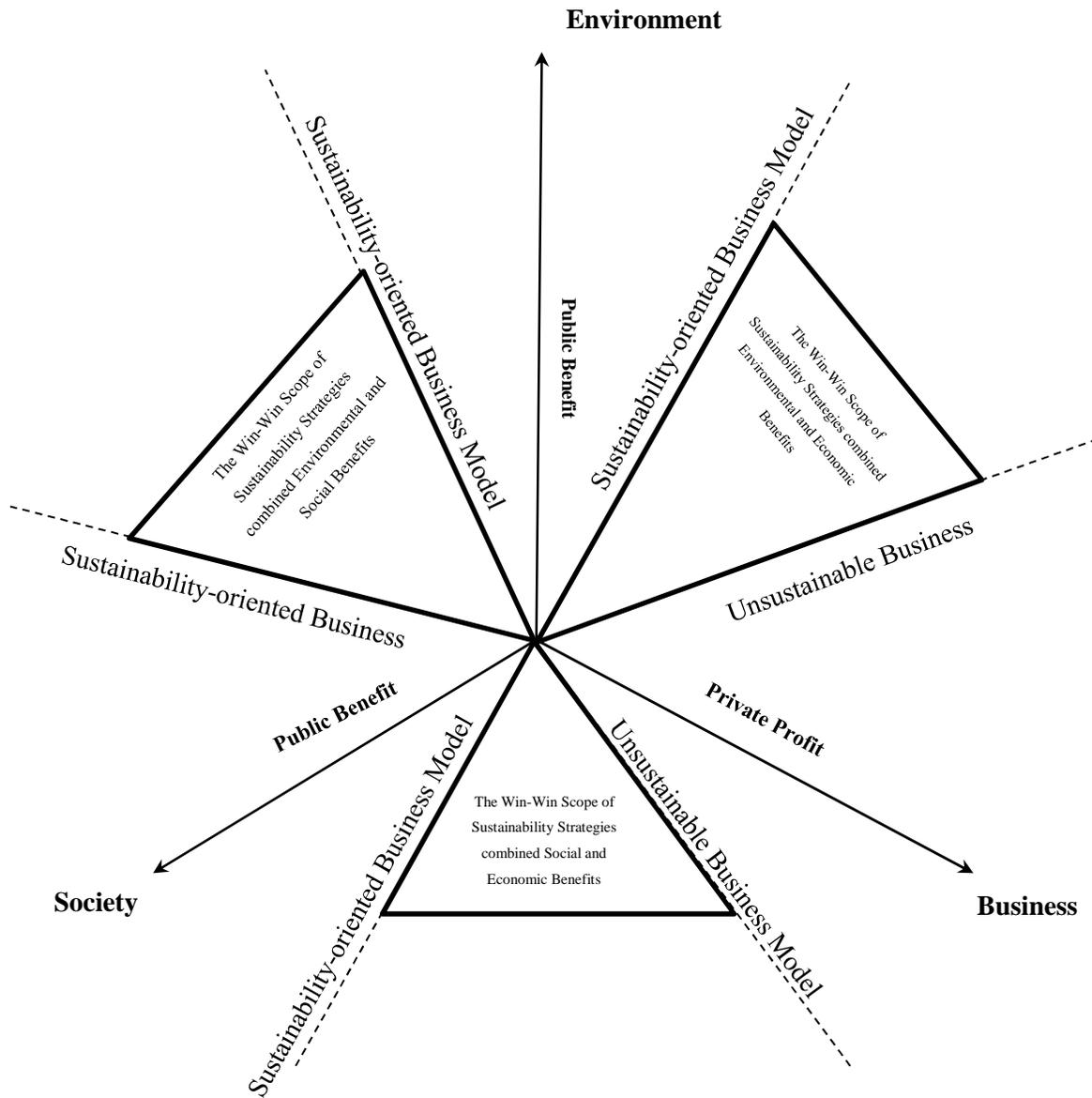
specific sustainability orients on a macro level. They also argued that not only does society influence the firm, but implementing corporate sustainability has long-term positive effects on the community (see Figure 1).

According to Freeman's stakeholder concept, corporations are responsible to their shareholders and other interest circles. Freeman stated that any healthy business must create amazing relationships with external stakeholders to attain a "win-win" position (Freeman, 1984). Beneath Freeman's strategic approach (see Figure 2), the immediate purpose of a firm is to service a chain of suppliers (including shareholders) that contribute to the input and output of the business's value construction. For example, companies that want to "take green action" might initially go after initiatives that produce financial savings and have positive environmental and social impacts. Savings might come from increased profits through reduction of direct costs, as well as decreases in insurance and expected liability costs or benefits created through developing the firm's image with regulators or buyers. According to the stakeholder approach, "corporate sustainability" measures more than how a business is accountable to its shareholders; it also considers stakeholder interest, which is designed to affect and be affected by a business' operations and objectives (Freeman, 1984). Stakeholders include shareholders, consumers, and employees, among others.

Beyond Ebner and Baumgartner's (2006) framework and stakeholder theory (Freeman, 1984), several theoretical models that influence corporate sustainability have been developed, such as institutional theory (DiMaggio and Powell, 1983), resource-based theory (Barney, 1991; Hart, 1995), and legitimacy theory (Suchman, 1995).

Based on the above concepts, corporate sustainability includes the social, economic, and environmental problems faced by a business that that intends to grow its business over the long term.

Figure 2: Sustainability Strategies “Win-Win” Scope



Adapted from Orsato (2009)

Dyllick and Hockerts (2002) introduced the concept of a new firm that is “meeting both business’s direct and indirect stakeholders (such as shareholders, consumers, employees, regulatory authorities, community representatives, etc.), without compromising its performance to encounter forthcoming stakeholder needs

also.” Van Marrewijk (2003) stated that corporate sustainability refers to “indicating both the inclusion of sociable and environmental concerns beneath business operations and also in relationships to stakeholders.”

Corporate sustainability also refers to a way for a firm to employ the process of sustainable development that aligns the self-interest of the business with additional local good (Hutton et al., 2007; Ciliberti et al, 2011). For the purpose of this study, we will use the International Institution for Sustainable Development (IISD) definition (developed in 1992), where corporate sustainability involves “utilizing different strategies and also activities (reactive/proactive) that cater to today’s business and its stakeholders needs while protecting, sustaining, and also developing humans and natural resources that will be crucial afterwards.”

Strategy is defined as a set of key decisions that are made to achieve objectives. A business organization’s strategy is a complete plan that explains how the business will achieve its mission and goals. Today, firms must adopt strategies that address and connect economic, social, and environmental factors. Corporate strategy describes the company’s overall orientation toward development through managing products and services while also being proactive toward social accountability. Therefore, sustainability strategies provide managers with choices that will enable them to align environmental and social opportunities for the company’s general strategy.

Judge and Douglas (1998) conceived the idea that a firm’s proactive stance would concern future environmental aspects, and extends beyond compliance with current regulations. These researchers’ empirical investigation, which used resource-based theory, also suggests that adopting environmental strategies results in higher corporate financial and environmental performance.

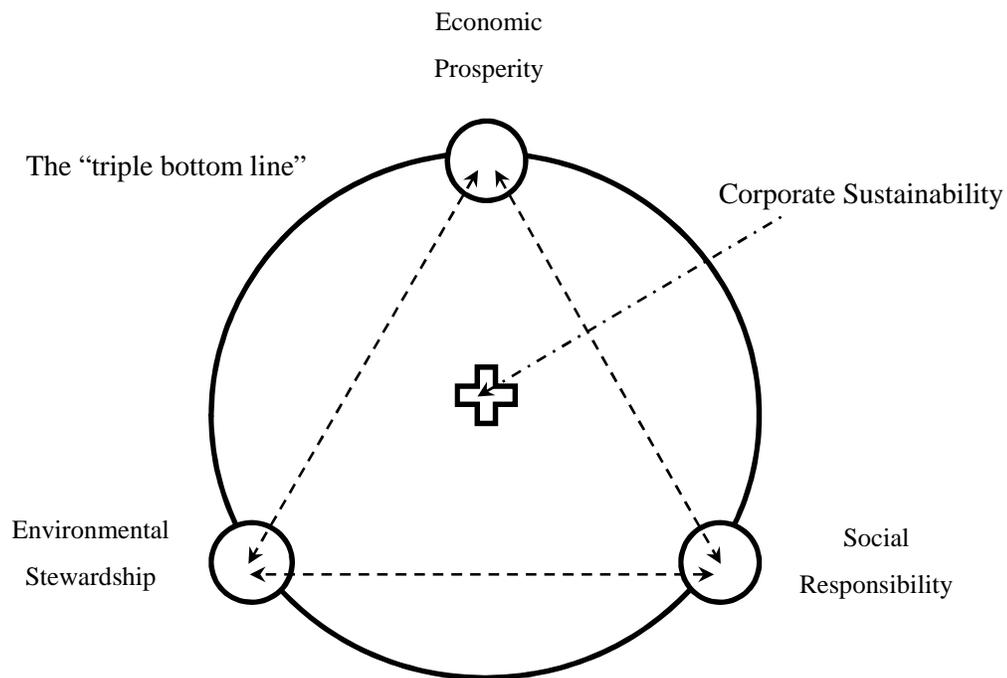
The Institute for Economy and the Environment at the School of St. Gallen completed research on the competitive aspects of sustainable management across various sectors. The research was based on an empirical body of evidence that sustainability strategies can be categorized according to their strategic orientation (society or market) and strategic behaviour (reactive or proactive) (Dyllick et al., 1997; Gminder et al., 2002).

Researchers strongly suggested that society and people must come before profit; in other words, managers have moral obligations beyond meeting minimal lawful obligations (Hammonds, 1996; Zadek, 2001). Based on the previous argument, extensive strategic thinking should consider the demands of a broad range of stakeholder groups as integral to the firm's scope to enhance its survival and maintain its worth. Disparate views on corporate sustainability for corporate strategy emphasize the fact that both concepts are not static. Companies are usually required to adopt different sets of strategies to remain viable.

Corporate sustainability is carefully associated with corporate social responsibility (CSR) as per many authors' notes. Many experts find that corporate sustainability and CSR are associated (Van Marrewijk, 2003). Steurer et al. (2005) argued that they have converged to very similar concepts in recent years. Others disagree that they remain discreetly distinct (Van Marrewijk, 2003; Steurer et al., 2005). In any case, both corporate sustainability and CSR concepts have been introduced to focus on the combination of financial, environmental, and social dimensions of business performance (Steurer et al., 2005). These three dimensions are generally referred to as the "triple bottom line" (Elkington, 1998). Salzmann et al. (2005) suggested that the relationship between business performance and sustainable development is intricate and dependent on many factors. Sustaining the enterprise, society, and the environment requires stabilizing acts that involve sustainability-oriented strategies that must be communicated with influential stakeholders (Roberts, 1992; Perrini and Tencati, 2006).

With respect to the debate on corporate sustainability, there is general agreement among scholars that various metrics should replace financial performance as the only measure of business success. Sustainable corporate performance includes environmental, social, and financial performance measures. The inclusion of these additional factors in the measurement and assessment of a business' overall performance can be illustrated by explaining that the company is responsible for not only protecting its financial welfare (i.e., profit) but for caring for the community (e.g., people) and society (i.e., the planet). These types of resources are often known as the three Ps of “triple bottom line” (TBL) concept.

Figure 3: Corporate sustainability in line with the “triple bottom line” approach



Adapted from Elkington (2006)

Hubbard (2009) argued that the “triple bottom line” concept, introduced by Elkington in 1998, is a distinctive measurement for sustainable organizational performance. It captures environmental, social,

and economic business performance. Sustainable corporate performance is simply the interface between the three elements (as illustrated in Figure 3). Elkington (1998) emphasizes the necessity of measuring companies' simultaneous performance in the three spheres, even if there is no common consensus on how to operationally evaluate performance from this perspective. Sustainable corporate performance should be evaluated according to environmental, social, and economic measurement elements. Sustainable business performance should be construed as a relative notion that is vibrant (not static). In addition, sustainable business performance is iterative in that it requires continuous monitoring to adapt the content of the measurement elements to changes that evolve on contexts and over time within a firm's boundaries.

The "triple bottom line" adds environmental and social measures to financial ones to describe organizational performance. Environmental performance refers to the sum of natural resources the firm consumes in its operations (e.g., renewable/non-renewable energy, air, water) and the by-products created by its activities (e.g., air emissions, chemical residues, liquid and/or solid). Social performance describes the effect that a firm within a certain supply chain has on its communities. Social performance is not a quick and straightforward measure. It is difficult in some cases, but shareholders' value, market share, customer satisfaction, and employee well-being are usually easy to assess; measures created by one business are readily transferrable to others. However, social and environmental performance measures are certainly unique to each business, or at least each industry, and are very difficult to quantify.

McWilliams and Siegel (2000) argued that a well-established body of knowledge has been developed over years that illustrate the relationship between corporate sustainability strategies and organizational performance. Margolis and Walsh (2003) agreed that some headway on the relationship has been achieved. However, the counter argument states that extant research on the impact of corporate sustainability strategies on organizational performance assumes that current evidence might be too

fractured and variable to support drawing generalizable conclusions (Orlitzky et al., 2003). Although considerable research has been done on the link between corporate sustainability strategies and business performance, it's still not well understood. Therefore, our study will address the above mentioned gaps by performing a meaningful integration of the theoretically and empirically existing body of knowledge. Law and Gunasekaran (2012) argued that certain factors motivate adoption and implementation of sustainability-oriented strategies. They suggested that future research should target development of a theoretical framework for adopting sustainable business strategies that incorporate the appropriate performance measures and metrics as basic tools for motivating management. They also argued that this framework should support managers in making decisions on strategies, tactics, and operational policies and their impact on organizational development.

1.2 Justification of the Research

Key efforts have been made to understand the impact of corporate sustainability strategies on organizational performance from different perspectives. Most studies combined multiple performance indicators, which preclude definitive conclusions on specific performance measure. Our review of some key studies on these relationships between corporate sustainability strategies and different organizational performance indicates positive, negative, mixed, or non-significant results. The review shows that while a number of studies reported a negative relationship or no significant association between corporate sustainability strategies and an organization's performance measured in multiple ways, the majority of the evidence reported was never looking at the overall performance. As a result, one cannot generalize the above explanations without additional research looking at the overall organizational performance.

To address these research need, the study integrates the results of previous corporate sustainability efforts (see Table 1) using meta-analytic techniques to develop a broader quantitative perspective on the firm overall performance.

Table 1: Relationship between corporate sustainability strategies and organizational performance
Summary of previous studies

Reference	Sustainability-Oriented Strategy	Dependent Variable	Empirical Approach
Abu Bakar, A. S., and Ameer, R. (2011)	Readability of Corporate Social Responsibility (CSR) Communication (disclosure)	Financial Performance (Profitability, Liquidity, and Financial Gearing)	Spearman test was used rather than the Pearson test because these variables have high kurtosis which means that they are not distributed normally
Abu Bakar, A. S., and Ameer, R. (2011)	Readability of Corporate Social Responsibility (CSR) Communication (disclosure)	Market-Based Performance (Tobin's q)	Spearman test was used rather than the Pearson test because these variables have high kurtosis which means that they are not distributed normally
Ben Brik, A., Rettab, B., and Mellahi, K. (2011)	Corporate Social Responsibility (CSR) (including community responsibility, environmental responsibility, employee responsibility, investor responsibility, customer responsibility, and supplier responsibility)	Business Performance (Financial Performance, Employee Commitment, and Corporate Reputation)	A hierarchical regression examination using standardized variables to reduce the potential effects of multi-co linearity with a mean-centering procedure
Boehe, D., and Barin Cruz, L. (2010)	CSR (Product Differentiation)	Export Performance Improvement	A survey research for a group of medium and large-sized Brazilian exporters that represent more than 90% of Brazilian exports and in order to analyze a model that includes manifest and latent variables (constructs), SEM was used
Branzei, O., Ursacki-Bryant, T. J., Vertinsky, I., and	Structural Formalization of Environmental Responsibilities	Environmental Performance	Structural equation modeling technique (SEM), which permits simultaneous estimation of the latent variables and their causal linkages with one set of

Zhang, W. (2004)			observed variables
Chan, R. Y. K. (2005)	Corporate Environmental Strategies (involvement in 10 major environmental management activities)	Financial Performance (returns on investment, earnings growth, sales growth, and market share change)	Post-hoc statistical analyses (Confirmatory factor analysis techniques) were conducted on the collected survey data for the purposes of validation. After satisfactory reliability and validity had been established for the constructs, full structural analysis was conducted to test all the hypothesized causal relationships
Chan, R. Y. K. (2005)	Corporate Environmental Strategies (involvement in 10 major environmental management activities)	Environmental Performance (complying with environmental regulations; limiting environmental impact beyond compliance; preventing and mitigating environmental crises; and educating employees and the public about the environment)	Post-hoc statistical analyses (Confirmatory factor analysis techniques) were conducted on the collected survey data for the purposes of validation. After satisfactory reliability and validity had been established for the constructs, full structural analysis was conducted to test all the hypothesized causal relationships
Cheung, Y., Tan, W., Ahn, H., and Zhang, Z. (2010)	Corporate Social Responsibility (CSR) (explicit policy emphasizing strict ethical behavior; not employing the under-aged; explicit equal employment policy; adherence to specified industry guidelines on sourcing of materials; explicit policy on environmental responsibility; abstaining from countries where leaders lack legitimacy)	Financial Performance (debt-equity ratio, return on equity, current asset ratio, and sales growth rate)	A correlation coefficients matrix was extracted among all the independent variables. The correlation matrix shows that the correlation coefficients among variables are at an acceptable level
Clemens, B. (2006)	Firms' green effectiveness, responsiveness, conscientiousness and investment strategy (Green Expenditures)	Financial Performance (Profitability)	Hierarchical regression analysis using the log normalized average annual output for the 3 years prior to the study with a display to the descriptive statistics using Kolmogorov-Smirnov and Shapiro-Wilk's tests for normality

			and the variance inflation factors
Dowell, G., Hart, S., and Yeung, B. (2000)	Adopting Local Environmental Standards	Market-Based Performance (Tobin's q)	Bivariate and multivariate analyses including Piece-Wise Linear regression
Dowell, G., Hart, S., and Yeung, B. (2000)	Adopting Stringent Global Environmental Standards	Market-Based Performance (Tobin's q)	Bivariate and multivariate analyses including Piece-Wise Linear regression
Fryxell, G. E., and Szeto, A. (2002)	Regulatory Compliance	Environmental Performance (The environmental performance of my facility has improved as a result of obtaining certification to ISO 14001)	Survey results were analyzed showing Descriptive statistics and correlations as well as regression analysis
Huang, C., and Kung, F. (2010)	Environmental disclosure (mitigate stakeholder environmental pressure in advance of stricter environmental regulations or legislation in the future)	Financial Performance (Financial leverage ratio, earnings before interest and taxes (EBIT) divided by EBIT minus interest expense as of fiscal year-end)	A regression model examining the relations between stakeholders and environmental disclosure
Huang, C., and Kung, F. (2010)	Environmental disclosure (mitigate stakeholder environmental pressure in advance of stricter environmental regulations or legislation in the future)	Market-Based Performance (Market share, measured as net sales divided by the total sales of the industry)	A regression model examining the relations between stakeholders and environmental disclosure
Huang, C., and Kung, F. (2010)	Environmental disclosure (mitigate stakeholder environmental pressure in advance of stricter environmental regulations or legislation in the future)	Financial Performance (Profitability, total return on assets, measured as the ratio of income before extraordinary items and average assets as of fiscal year-end)	A regression model examining the relations between stakeholders and environmental disclosure
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	Financial Performance (ROE, net income divided by total equity)	Descriptive statistics of CSR and financial characteristics for the 692 listed firms in the sample and also the comparison of those characteristics for state-owned and non-state-owned firms with two-sample Wilcoxon rank-sum tests for differences across the two sub-samples. As well as multiple regression analysis
Li, W., and Zhang, R.	Corporate Social Responsibility (CSR) (using index consisting of	Financial Performance (Total Asset, the log form of	Descriptive statistics of CSR and financial

(2010)	36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	total assets)	characteristics for the 692 listed firms in the sample and also the comparison of those characteristics for state-owned and non-state-owned firms with two-sample Wilcoxon rank-sum tests for differences across the two sub-samples. As well as multiple regression analysis
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	Financial Performance (Leverage, total debt divided by total assets)	Descriptive statistics of CSR and financial characteristics for the 692 listed firms in the sample and also the comparison of those characteristics for state-owned and non-state-owned firms with two-sample Wilcoxon rank-sum tests for differences across the two sub-samples. As well as multiple regression analysis
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	Market-Based Performance (Tobin's q = the sum of market value and book value of debts divided by total assets)	Descriptive statistics of CSR and financial characteristics for the 692 listed firms in the sample and also the comparison of those characteristics for state-owned and non-state-owned firms with two-sample Wilcoxon rank-sum tests for differences across the two sub-samples. As well as multiple regression analysis
Mishra, S., and Suar, D. (2010)	Corporate Social Responsibility (CSR) (a comprehensive measure for each primary stakeholder group incorporating corresponding social, ethical, legal, and economic issues derived from local and global standards)	Financial Performance (industry-adjusted ROA)	Descriptive statistics and Pearson correlation among the studied variables is calculated as well as a hierarchical regression analyses were carried out
Mishra, S., and Suar, D. (2010)	Corporate Social Responsibility (CSR) (a comprehensive measure for each primary stakeholder group incorporating corresponding	Non Financial Performance (A 12-item scale (1) sales growth rate, (2) market share, (3) operating profits, (4) workplace relations, (5) cash	Descriptive statistics and Pearson correlation among the studied variables is calculated as well as a hierarchical regression

	social, ethical, legal, and economic issues derived from local and global standards)	flow from operations, (6) return on investment, (7) new product development, (8) market development, (9) research and development, (10) cost reduction programs, (11) personnel development, and (12) employee health and safety)	analyses were carried out
Muller, A., and Kolk, A. (2010)	Focus on Regulation	Social Performance (Environmental Performance, Community Relations, and Labor Relations)	Searching for a factor structure in our data using exploratory factor analysis (EFA) and applying a confirmatory approach to analyze the validity of our constructs and the risk of common method bias
Muller, A., and Kolk, A. (2010)	Management Commitment to Ethics	Social Performance (Environmental Performance, Community Relations, and Labor Relations)	Searching for a factor structure in our data using exploratory factor analysis (EFA) and applying a confirmatory approach to analyze the validity of our constructs and the risk of common method bias
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green Production (GP) Strategy	Financial Performance (facilitating marketing and product benefits, revenue improvement by performing environmental improvement projects, competitiveness enhancement in local market, and competitiveness enhancement in export market)	Three stages analysis, reliability and the construct validity of independent and dependent constructs evaluated using Cronbach 's coefficient followed by a confirmatory factor analysis (CFA). In particular, a second order CFA where composite scores were used to reflect the underlying construct dimensions and to test the hypotheses using structural equation modeling (SEM) in the final stage
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green Production (GP) Strategy	Non Financial Performance (public relationship and corporate image improvement, and customers satisfaction improvement)	Three stages analysis, reliability and the construct validity of independent and dependent constructs evaluated using Cronbach 's coefficient followed by a confirmatory factor analysis (CFA). In particular, a

			second order CFA where composite scores were used to reflect the underlying construct dimensions and to test the hypotheses using structural equation modeling (SEM) in the final stage
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green R & D (GRD) Strategy	Financial Performance (facilitating marketing and product benefits, revenue improvement by performing environmental improvement projects, competitiveness enhancement in local market, and competitiveness enhancement in export market)	Three stages analysis, reliability and the construct validity of independent and dependent constructs evaluated using Cronbach 's coefficient followed by a confirmatory factor analysis (CFA). In particular, a second order CFA where composite scores were used to reflect the underlying construct dimensions and to test the hypotheses using structural equation modeling (SEM) in the final stage
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green R & D (GRD) Strategy	Non Financial Performance (public relationship and corporate image improvement, and customers satisfaction improvement)	Three stages analysis, reliability and the construct validity of independent and dependent constructs evaluated using Cronbach 's coefficient followed by a confirmatory factor analysis (CFA). In particular, a second order CFA where composite scores were used to reflect the underlying construct dimensions and to test the hypotheses using structural equation modeling (SEM) in the final stage
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green marketing (GM) Strategy	Financial Performance (facilitating marketing and product benefits, revenue improvement by performing environmental improvement projects, competitiveness enhancement in local market, and	Three stages analysis, reliability and the construct validity of independent and dependent constructs evaluated using Cronbach 's coefficient followed by a confirmatory factor analysis

		competitiveness enhancement in export market)	(CFA). In particular, a second order CFA where composite scores were used to reflect the underlying construct dimensions and to test the hypotheses using structural equation modeling (SEM) in the final stage
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green marketing (GM) Strategy	Non Financial Performance (public relationship and corporate image improvement, and customers satisfaction improvement)	Three stages analysis, reliability and the construct validity of independent and dependent constructs evaluated using Cronbach 's coefficient followed by a confirmatory factor analysis (CFA). In particular, a second order CFA where composite scores were used to reflect the underlying construct dimensions and to test the hypotheses using structural equation modeling (SEM) in the final stage
Rettab, B., Brik, A., and Mellahi, K. (2009)	Corporate Social Responsibility (CSR) (a 26-item scale for six practices: community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, customer responsibilities, and supplier responsibilities)	Financial Performance	The model fit was evaluated using a series of indices – the DELTA2 comparative fit (CFI), goodness-of-fit index (GFI), Tucker-Lewis (TLI), and the root mean square error of approximation (RMSEA) indices and the fit to the data was achieved for the first-order based CFA
Rettab, B., Brik, A., and Mellahi, K. (2009)	Corporate Social Responsibility (CSR) (a 26-item scale for six practices: community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, customer responsibilities, and supplier responsibilities)	Employee Commitment	The model fit was evaluated using a series of indices – the DELTA2 comparative fit (CFI), goodness-of-fit index (GFI), Tucker-Lewis (TLI), and the root mean square error of approximation (RMSEA) indices and the fit to the data was achieved for the first-order based CFA

Rettab, B., Brik, A., and Mellahi, K. (2009)	Corporate Social Responsibility (CSR) (a 26-item scale for six practices: community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, customer responsibilities, and supplier responsibilities)	Corporate Reputation	The model fit was evaluated using a series of indices – the DELTA2 comparative fit (CFI), goodness-of-fit index (GFI), Tucker-Lewis (TLI), and the root mean square error of approximation (RMSEA) indices and the fit to the data was achieved for the first-order based CFA
Wagner, M. (2010)	Corporate Sustainability Strategy (natural environment, characteristics of the firm's products, community aspects, diversity issues, employee relations, human rights concerns and corporate governance)	Market-Based Performance (Tobin's q)	a random effects panel model was estimated as well as correlations and descriptive statistics
Wagner, M. (2010)	Corporate Environmental Strategy (natural environment, characteristics of the firm's products, community aspects, diversity issues, employee relations, human rights concerns and corporate governance)	Market-Based Performance (Tobin's q)	a random effects panel model was estimated as well as correlations and descriptive statistics
Wagner, M. (2010)	Corporate Social Strategy (natural environment, characteristics of the firm's products, community aspects, diversity issues, employee relations, human rights concerns and corporate governance)	Market-Based Performance (Tobin's q)	a random effects panel model was estimated as well as correlations and descriptive statistics
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L. (2010)	Cleaner Production (low-cost schemes) Strategy	Financial Performance (Profitability, Increase rate of net profit, and Return on equity)	The relationship between cleaner production and business performance was analyzed using Structure Equation Model (SEM), an it is a technique involving multiple regression analysis, path analysis and confirmatory factor analysis
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L.	Cleaner Production (high-cost schemes) Strategy	Financial Performance (Profitability, Increase rate of net profit, and Return on equity)	The relationship between cleaner production and business performance was analyzed using Structure Equation Model (SEM), an it is a technique involving

(2010)			multiple regression analysis, path analysis and confirmatory factor analysis
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L. (2010)	Cleaner Production (low-cost schemes) Strategy	Non Financial Performance (Market share, Corporate reputation, and Shareholders' confidence)	The relationship between cleaner production and business performance was analyzed using Structure Equation Model (SEM), as it is a technique involving multiple regression analysis, path analysis and confirmatory factor analysis
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L. (2010)	Cleaner Production (high-cost schemes) Strategy	Non Financial Performance (Market share, Corporate reputation, and Shareholders' confidence)	The relationship between cleaner production and business performance was analyzed using Structure Equation Model (SEM), as it is a technique involving multiple regression analysis, path analysis and confirmatory factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Environmental Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Positive Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Negative Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Operational Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a

			principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Environmental Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Positive Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Negative Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Operational Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Environmental Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Positive Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Negative Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor

			analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Operational Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Environmental Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Positive Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Negative Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Operational Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Environmental Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Positive Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis

Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Negative Economic Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Operational Performance	Descriptive statistics, alpha coefficients and item-total correlations are used to initially analyze the survey data after application of a principal components factor analysis

This analysis offers two contributions to organizational research on corporate sustainability. First, previous sustainable development scholarship has been equivocal in establishing a link between corporate sustainability and firm performance. Prior research has generally focused on evaluating individual sustainability-oriented strategies, so there is no collective view of the efficacy of different sustainability-oriented strategies adopted by different types of organizations. This study builds on previous corporate sustainability research findings to establish a much-needed overall assessment of the impact of sustainability-oriented strategies on the firm's "triple bottom line." In so doing, this research evaluates the entire body of peer-reviewed corporate sustainability literature and provides critical insights regarding the relationship between adoption and improvement of the firm's performance. Second, based on Dyllick et al. (1997) and Gminder et al. (2002) classification of a firm's sustainability strategies, which are based on the firm's strategic behaviour and whether it takes a reactive or proactive stance, the analysis will distinguish between stance and its impact on the company's performance. In making this distinction, we examine the proposition that proactive sustainability-oriented strategies, where firms make considerable investments in technologies and their management practices focus on reducing their environmental impact and increasing their social impact, improve a firm's performance more than firms that adopt reactive

sustainability-oriented strategies. Our analysis offers evidence that firm performance is worse, or does not respond at all, especially for firms that do not encounter proactive initiatives.

In this study, we tend to refine the research stream, which looks at the association involving corporate sustainability strategies and organizational performance, by shifting from the broad inquiry of whether corporate sustainability strategies impact performance to examining the association of corporate sustainability strategies to three targeted aspects of organizational performance: environmental, social, and economical.

1.3 Overview of the Research Methodology

This section briefly outlines the methodology used. We implemented a systematic review methodology at the beginning to create one dataset of articles and to analyze those articles. The following was initially used by healthcare scholars and then borrowed and adopted by management researchers (Tranfield et al., 2003). According to Denyer and Neely (2004), researchers normally use a systematic review (which is not like a traditional narrative literature review) to eliminate bias regarding the inclusion and exclusion of a certain study; it also provides a detailed approach on how a review is performed. Crowther and Cook (2007) argued that replicability and transparency are achieved at higher levels by using the systematic review technique.

To evaluate our hypotheses, we relied on meta-analytic techniques that considered the aggregate association between corporate sustainability strategies and organizational performance. This was used to integrate the entire frame of literature to produce more generalized perceptions of the relationship between corporate sustainability strategies and organizational performance. The first step in executing the meta-analysis involved identifying the population of articles based on evidence with regard to inclusion.

For the purposes on this study, we rely on the IISD's characterization of corporate sustainability. Hubbard (2009) claimed that the "triple bottom line" is one candidate for sustainable organizational performance measurement.

Ultimately, 18 articles met our choice considerations and were included in the report. Lipsey (2001) and Cohen (1988) confirmed that this number is significant because a meta-analysis can be carried out on as few as two qualifying studies because the statistical power is limited only by the data described in the original evidence. The 18 scholarly articles were selected from top-tier academic journals consisting of approximately 64 experimental treatments that measured an observed (not self-reported) behavioural effect, yielding a whole sample size of 23,871 observations. These confounding final conclusions were based on combined various treatments that were reported in the entire population of studies.

1.4 Hypotheses

At first, traditional belief states that business intends to make a profit without social or environmental considerations; however, on the opposite side, a new kind of investment is getting more attention and garnering momentum. The new movement reconciles corporate social and environmental responsibilities and emphasizes the fact that adopting corporate sustainability-oriented strategies produces increasing value and better results in today's business. Secondly, overall organizational performance derived by corporate sustainability-oriented strategies is starting to gain momentum in research and is being quantified in many different ways. Third, recent business scandals have initiated a radical change in the way firms operate.

Yet, the relationship between corporate sustainability-oriented strategies and their impact on organizational performance is still in its infancy. There are many different facets that are still somewhat

ambiguous (Votaw, 1973). Brickley et al. (1997) and (2002) points out that a firm's value maximization requires a deeper understanding of its social and environmental outcomes, and more than profits typically discussed by economists.

So the question is, "Will a firm become unprofitable by adopting high social and environmental standards while its competitors adopt lower ones?" In this study, we examine whether corporate sustainability strategies have an impact on overall organizational performance.

Hypothesis 1: Organizations adopting corporate sustainability strategies have improved their firm's "triple bottom line."

In theory, environmental stewardship, social duty, and economic success can be embraced at the same time. However, developing one comprehensive sustainability strategy that can actually be implemented is definitely a challenge. Furthermore, which strategy can be implemented without facing some challenges? The strategy development process typically focuses on expanding revenue-generating activities while reducing overhead costs. At the same time, adopting environmental protection and prevention strategies based on different stakeholders' pressures could become costly and difficult to implement due to internal pressures.

However, Placet and Anderson (2005) debated that drafting strategies based on corporate environmental stewardship and social responsibility awareness should enhance a firm's economic output. Increasing resource productivity via more efficient utilization of materials and waste reduction will help to achieve lower production costs.

Corporate support for environmental compliance will result in improved output, while demonstrating social awareness will help to reduce lost workdays, increase company commitment, and decrease

employee turnover, all of which help to improve the bottom line. Strategies for environmental stewardship, sociable responsibility, and financial prosperity are usually best developed simultaneously (see Figure 4).

A firm’s ultimate goal is to develop different sustainability-oriented strategies that transition from resource-intensive and volume-maximizing operations to less-intensive resource usage and maximum stakeholder value.

Research at the Institute for Economy and Environment revealed an empirical body of evidence that classifies sustainability strategies according to strategic orientation (market or society) and strategic behaviour (reactive or proactive) (Dyllick et al., 1997; Gminder et al., 2002). Companies can realize four possible sources of benefits when putting these strategies into practice:

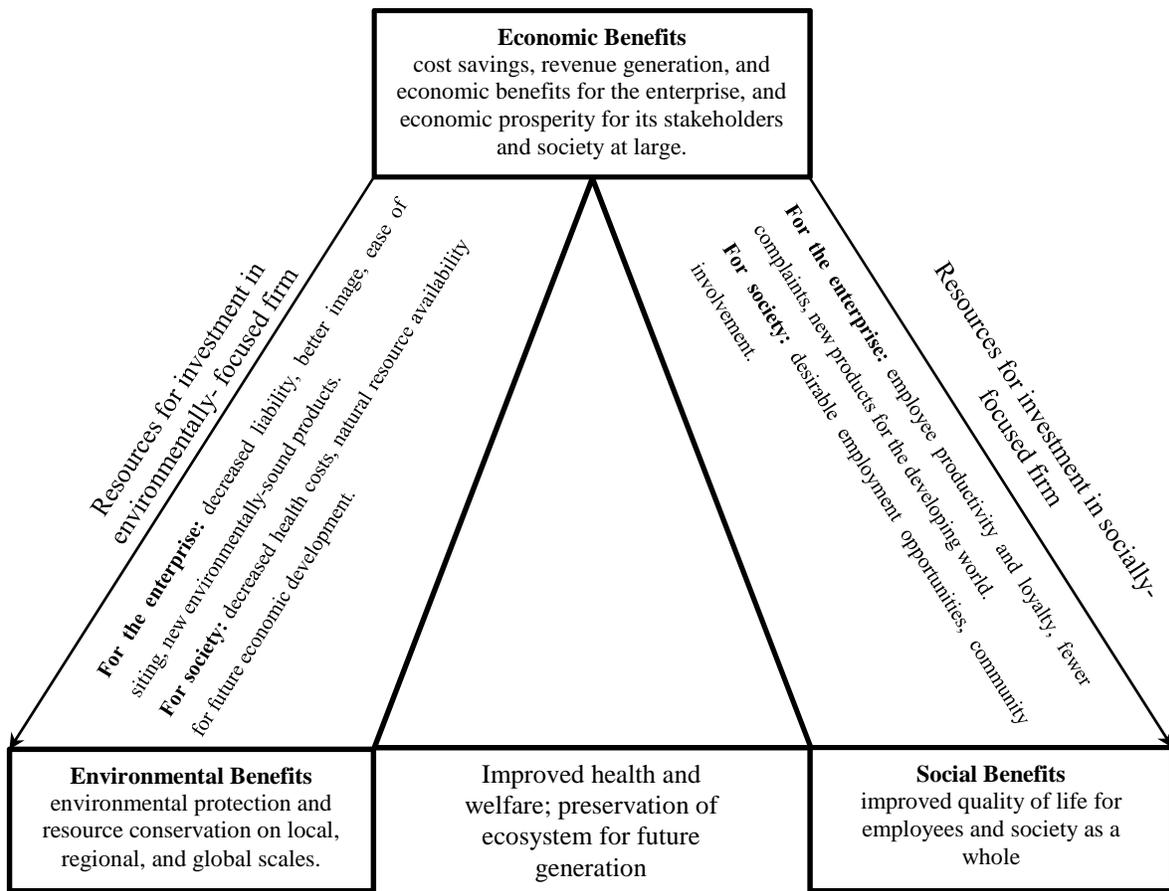
1. “Credible” strategies tackle issues of image and reputation;
2. “Efficient” strategies improve productivity and efficiency;
3. “Transformative” strategies create new markets by shifting existing institutional frameworks.
4. “Innovative” strategies differentiate the corporation’s products and services in the market; and

The following table (see Table 2) shows four different sustainability-oriented strategic approaches, as well as their strategic orientation (market vs. society) and strategic behaviour (reactive vs. proactive). The order of these types of strategies is one possible sequence that describes the management of sustainability.

Table 2: The four different types of sustainability strategies

Sustainability-oriented Strategy Type	Public	Market
Reactive	Creditable	Efficient
Proactive	Transformative	Innovative

Figure 4: The “triple bottom line” three goals integrated: environmental stewardship, social responsibility, and economic prosperity for both the enterprise and society



Adapted from Placet and Anderson (2005)

A business’s strategic behaviour (reactive compared to proactive) is a key determinant of overall organizational performance. Because of available opportunities in the marketplace, we hypothesize that firms adopting proactive sustainability-oriented strategies are likely to have a higher payoff than those firms that adopt reactive sustainability-oriented strategies.

Hypothesis 2: Adopting proactive sustainability-oriented strategies is associated with greater improvement in the firm’s “triple bottom line” than adopting reactive sustainability-oriented strategies.

1.5 Contributions

Salzmann et al. (2005) claimed that the relationship between a firm's business performance and its sustainable development strategy is very complex. Based on this argument, this research offers several contributions on the literature of business sustainability-oriented strategies and organizational performance association. At this point, there is very little known about fundamental issues, such as the strength of the relationship between corporate sustainability strategies and firm performance, although this research field was promoted by scholars and policymakers. Building on the work of McWilliams and Siegel (2011), providing evidence that is more generalizable to the body of knowledge is the first contribution of this study.

Several scholars used the resource-based theory to construct a formal model of "profit maximizing" for corporate sustainability. The conclusion stated that if two companies produce identical products, but one firm adds a "social" attribute or feature to the product, then some consumers and/or stakeholders will prefer that firm's product (McWilliams and Siegel, 2000). So, the second contribution of this study involves investigating the potential impact of bundling the two strategic behaviours (reactive or proactive) on performance.

Hart (1995) and Florida (1996) argued that organizations' attitudes and behaviours normally follow an evolutionary path. Firms have begun to adopt proactive corporate sustainability strategies that contribute to their sustainable development goals. It is becoming more important to align a firm's self-interest with the greater public good in ways that add value to both the firm and society. Therefore, separately measuring the impact of each strategic behaviour (reactive versus proactive), as well as its impact on organizational performance, is critical in understanding which approach is more significant. It also helps

in quantifying the value-creation process to the company adopting either sustainability-oriented strategic approach.

1.6 Organization of the thesis

This thesis consists of four additional chapters. A brief description of each chapter follows: Chapter Two reviews literature on the relationship between corporate sustainability-oriented strategies and organizational performance. Chapter Three describes the methodology employed in this study. It consists of: systematic review method used to build the database, meta-analysis technique used in analyzing the data collected, inclusion criteria and empirics. Chapter Four reports the analysis and key findings. Finally, Chapter Five presents discussions, limitations and future research in the area and conclusions.

Chapter 2

2. Literature Review

2.1 Introduction

This chapter consists of two sub-sections. The first section describes different typologies of corporate sustainability strategies adopted by firms. It also explains how we measure organizational performance using the “triple bottom line” (TBL) concept. The second section sheds light on the relationship between corporate sustainability strategies and firm’s performance by examining a number of empirical studies.

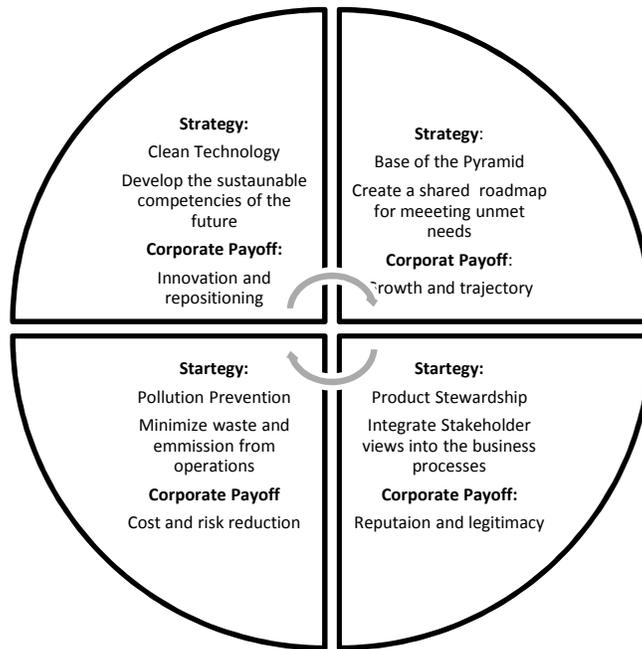
2.2 Corporate sustainability strategies

Baumgartner and Ebner (2010) argued that scholars have achieved noticeable results in this research domain. Scholars have defined strategies that focus on internal and external sustainability issues. These strategies are designed to improve performance of identified issues; however, in many situations, there is no connection between performance and sustainability strategies.

Hart and Milstein (2003) developed the “sustainability strategy portfolio,” which introduces the base of the pyramid strategy, as an extra dimension (see Figure 5). Firms can create sustainable business by addressing different challenges as identified by this portfolio. For example, a firm could pursue pollution prevention by minimizing a specific type of (gas, liquid, and/or solid) waste from current operations, while also working toward purchasing and/or developing a more sustainable solution that uses clean technologies and/or future skill sets, which could then be integrated within its structure. Extensive communication and dialogue with external stakeholders can challenge any firm that tries to integrate sustainability into its current operations, with respect its current product portfolio (i.e., product

stewardship), and its economical new product portfolio related to social and environmental problems (i.e., the base of the pyramid).

Figure 5: Sustainability Strategy Portfolio



Adapted from Hart and Milstein (2003)

Hart’s “sustainability strategy portfolio” could be looked at as one way to categorize corporate sustainability strategies. It also offers practical guidelines by requiring concrete actions that are supported by sound risk minimization and cost reduction strategies that improve the firm’s image and legitimacy, drive its innovation activities, adjust its competitive position, and push for growth in the shareholders’ value (Hart and Milstein, 2003). Addressing the four quadrants proposed by Hart’s “sustainability strategy portfolio” will develop and sustain the firm’s value.

According to Dyllick et al. (1997) and (2002), Ebner and Baumgartner (2006), and Baumgartner and Ebner (2010), there are various sustainability-oriented strategies (see Table 3).

Table 3: Table 3: Baumgartner’s Sustainability-oriented Strategy Types

Sustainability Strategy	Definition
Introverted	A risk mitigation strategy - focuses on legal and other external standards concerning environmental and social aspects in order to avoid risks for the firm.
Extroverted	A legitimating strategy - focuses on external relationships and license to operate.
Conservative	An efficiency strategy - focuses on eco-efficiency and cleaner production.
Visionary	A holistic strategy - focuses on creating competitive advantages through differentiation strategies and innovation activities to offer customers and stakeholders’ unique advantages.

An introverted strategy is demonstrated with one core question: Is the action for sustainable development key and useful for that firm? A firm’s operations must comply with current and future environmental and social rules and regulations and other external standards to avoid related consequences. Pressure for this strategy is external, but the action is internal, so it is called “introverted.” These forces promote the implementation of organizational solutions. However, an extroverted strategy examines the external relationship of the firm within its boundaries. The firm is more concerned with “public acceptance.” Stakeholders are familiar with the aforementioned rules, regulations, and standards. These companies create aspiring environmental programs, but their efforts and progress toward sustainable development is relatively minimal. In many cases, there is more green publicity than action. A conservative strategy focuses on eco-efficiency. Products and services consider material consumed, energy spent, emission prevented, waste minimized and cost reduced. Implementing efficient production processes that capture the firm’s competitive advantage reduce its environmental impact. Cleaner production processes are usually aligned with the conservative strategy. The firm’s sustainable development opportunities are usually clear.

Sustainability issues within a firm's business activities are part of its "visionary strategy." The firm incorporates sustainable development into its vision and mission. Competitive advantages result from new innovations and differentiation practices through offering customers unique advantages and providing stakeholders with competitive value.

Visionary strategies are either conventional or systemic. Market opportunities drive conventional visionary strategies, which are based on the firm's opportunistic manner. Strategic management of conventional visionary-oriented companies incorporates sustainability issues that will lead to market advantages. The firm's focus is outside in; the market perspective produces strategy formulation inputs.

Systemic visionary strategies employ an inside-out perspective. Sustainable development integrates market-based and resource-based views, which are rooted in the firm's normative level. Different environmental and social aspects are associated with various business activities; sustainability principles developed by Robèrt et al. (2002) showed that the aforementioned strategy types describe generic possibilities to deal with sustainability challenges, which encourage us to look at different views. Researchers suggest that society and people must precede profit, and managers are morally obligated to do more than meet minimal lawful obligations (Hammonds, 1996; Zadek, 2001).

The Institute for Economy and the Environment at the School of St. Gallen researched the competitive aspects of sustainable management across various sectors. According to its empirical body of evidence, sustainability strategies can be categorized by strategic orientation (society or market) and strategic behaviour (reactive or proactive) (Dyllick et al., 1997; Gminder et al., 2002). The research concluded that sustainability-oriented strategies usually benefit the firm in five differentiable dimensions: reduction and control of risks; credibility, reputation, and improvement of the firm's image; efficiency and productivity; market differentiation; and creation of a market for sustainability through product and service innovation.

Firms adopt these strategies primarily to reap the advantages, which also function as corporate goals. These dimensions form the basis for the St. Gallen corporate sustainability-oriented strategies, which are summarized in Table 4.

Table 4: Dyllick’s Sustainability-oriented Strategy Types

Sustainability Strategy	Focus
Secure	Strategies to minimize the risks associated with operations.
Credible	Strategies to improve productivity and eco and socio efficiency.
Efficient	Proactive Strategies to protect image and reputation.
Innovative	Market Differentiation Strategies to provide customers with sustainability related added value.
Transformative	Market Development Strategies to contribute to the structural change of business and of society in general.

A firm adopts “secure” strategies to ensure that its market position and capabilities can overcome any potential limitations. The areas that mark these strategies are operational, financial, legal risk control, and reputation improvement.

As the firm becomes more proactive, it uses “credible” strategies to protect itself from potential image or reputation damage. These strategies include actively building the firm’s image, identifying the firm’s current and future stakeholders, and addressing their expectations. The firm might take defensive actions when there is a high risk to a brand’s value or there is an industry threat.

“Efficient” strategies are more proactive because they focus on productivity improvement and eco-efficiency, as determined by current and future environmental regulations and social considerations. The strategy goal is cost reduction. Social aspects addressed within this strategy could include unemployment reduction and increasing social partnerships that will reflect on the firm’s social performance.

“Innovative” strategies focus on environmental and/or social product/services aspects by providing customers with added value through product/service differentiation. A firm could achieve differentiation by using social marketing, as well as environmental and/or social labels. From an internal perspective, a firm could incorporate sustainability by improving knowledge management processes and building relevant skills.

Finally, the firm adopts “transformative” strategies as it becomes more powerful, which enables it to influence industry, change policy, and stimulate social stakeholders to pursue sustainable development. The firm can promote structural changes that affect business and society, and can also set market conditions. These strategies place the firm “ahead of the game” through the development of environmentally and socially responsible goods and services. At this stage, the firm can increase its market share by developing new sustainability standards or labels and changing current practices within these markets (or creating its own markets). These secure, credible, and efficient strategies are more reactive and impact the firm’s internal processes; innovative and transformative strategies are more proactive and oriented toward the external environment and customers. Both types of strategies affect the firm’s performance. Moving on this continuum from adopting “secure” to “transformative” strategies parallels Willard’s five stages of sustainability strategy. It is still possible to move between strategies, depending on various factors. The concept of progression through stages reflects Carroll’s (1979) and Kolb’s (2008) conceptual thinking about responsiveness theory.

Sharma and Vredenburg (1998) researched the link between a firm’s responsiveness and its organizational capabilities. They examined the links between budding competitive organizational capabilities that create value from adopting responsiveness strategies (Hart, 1995). They classified firms as either reactive or proactive. According to their definition, a firm is proactive if it exhibits a consistent

pattern of voluntary actions across all dimensions relevant to its range of activities, which are not required to fulfill environmental regulations or respond to isomorphic pressures within the industry.

A firm is reactive only if it emphasizes the reduction of operational, financial, and legal risks of accidents. Environmental accidents cannot be insured and can result in financial disruption, negative media exposure, and damaged reputations. These firms undertake voluntary initiatives to preserve and restore the habitat and reduce waste; proactive initiatives involve controlling emissions and waste as per regulations, reducing material usage, innovating and developing less polluting products and services, and forming partnerships with stakeholders for environmental preservation and social prosperity.

Finally, Willard (2005) emphasized that corporate sustainability depend on the firm’s economic, environmental, and social responsibilities that contribute to its viability, public welfare, and quality of life. From the firm’s perspective, sustainable development involves maintaining and enhancing economic, natural, and social performance. Willard introduced the sustainability five stages model that is common among most sustainability-oriented strategies (as shown in Figure 6 and described in Table 5).

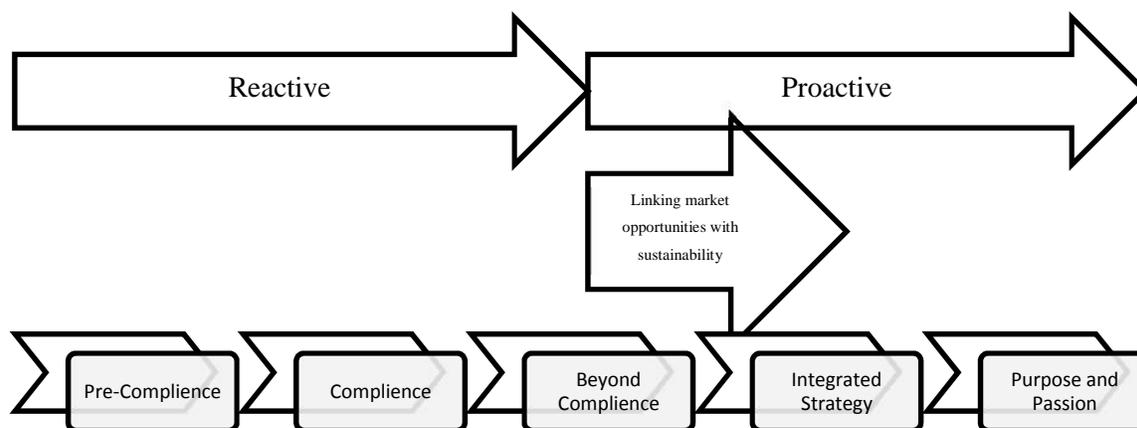
Willard (2005) stated that firms move along a continuum, beginning with a “no obligation” stage that ignores environmental and social responsibilities. Firms move along the continuum to more reactive compliance activities, and then progress to a proactive integration of sustainability into operations and strategy.

Table 5: Willard’s Five Stages of Sustainability

Sustainability Strategy	Definition
Pre-Compliance	The strategy is no obligation beyond profits, ignore sustainability and actively fight sustainability related regulation.
Compliance	The strategy is to manage liabilities by obeying the law and regulations, meet regulatory demands and enforcement, react to public pressure and lip service to sustainability.

Beyond Compliance	It is a proactive strategy which looks at continuous improvements in eco-efficiency, cleaner processes, and better waste management to save costs. Sustainability initiatives could be green housekeeping, community investment and social marketing to enhance reputation.
Integrated Strategy	The strategy looks at discontinuous, leapfrogging breakthroughs, transformation and re-branding with a commitment to sustainability. Sustainability is integrated in key business strategies to capture added value through breakthrough sustainability initiatives, cleaner product, eco-effectiveness, life-cycle Stewardship, and competitive advantage.
Purpose and Passion	The strategy is driven by a passionate, values-based commitment to improving the well-being of the company, society and the environment.

Figure 6: Willard's Five Stages of Sustainability



Adapted from Willard (2005)

Many scholars have contributed to understanding different profiles of corporate sustainability strategies from an operational perspective. Their description of sustainability-oriented strategies depends on the firm's levels of maturity.

Table 6 summarizes different theories that define different typologies. In this research, we will use the reactive/proactive typology introduced by Sharma and Vredenburg (1998) and supported by Willard

(2005) to label each strategy gathered in our sample and related to the firm’s economic, environmental, and social performance.

Table 6: Different typologies of Corporate Sustainability Strategies

Author(s)	Corporate Sustainability Strategies				
Hart (2007) Sustainable Value Portfolio		Pollution Prevention	Clean Technology	Product Stewardship	Base of the Pyramid
Baumgartner and Ebner (2010)	Introverted	Extroverted	Conservative	Transformative	Visionary
Dyllick et al., (1997)	Secure	Credible	Efficient	Innovative	Transformative
Sharma and Vredenburg (1998)	Reactive				Proactive
Willard (2005)	Pre-Compliance	Compliance	Beyond Compliance	Integrated Strategy	Purpose and Passion

2.3 Measuring Organizational Performance using the “triple bottom line” (TBL) concept

Corporate sustainability has captured the attention of many scholars across different disciplines. Numerous empirical studies have tested various theoretical frameworks that attempt to explain the social, environmental, and economic impacts of sustainability. The most important idea among these studies involved “greening” an entire organization. Most research attempted to link corporate sustainability-oriented strategies to reaping competitive and financial benefits (e.g., Stead and Stead, 1992; Shrivastava and Hart, 1995; Shrivastava, 1995; Welford, 1995; Shrivastava, 2006). This suggests that future economic engines should be environmentally and socially sound. All eco-centric approaches presented in the literature are an evolution toward integrating the firm’s social and environmental responsibility with its economic activities. The triple bottom line (TBL) theory is a simple representation of how businesses are looking to the impact of their commercial activities rather than just financial performance. The TBL

concept has gained momentum over the past few years, and might enable corporations to better capture their non-financial performance.

According to McGraw-Hill (book publisher), “TBL is a calculation of the corporate economic, environmental, and social performance.” The TBL framework requires parity of treatment of the three dimensions of a firm’s performance, and does not give unique weight to financial results. The TBL theory includes more than economic value, as it adds two additional balance sheets to measure the social and environmental impacts of the firm’s business activities. This framework is most comprehensive because it attempts to capture a whole set of issues that a firm should address to minimize harmful business activities and to ensure the creation of positive social, environmental, and economic value within its community (Elkington, 1998).

TBL reports business results and communicates social and/or environmental impacts of current and/or future business activities. From a decision-making perspective, TBL attempts to state the firm’s current or potentially future considerations in addressing the impact of its activities on its profits, society, and the environment. In summary, the company must consider the needs of all of its “stakeholders.” Conceptually, TBL begins with direct shareholders and moves to indirect ones (e.g., employees, customers, suppliers), who have a contractual relationship with the company. A secondary group of “stakeholders” includes governments, local communities, and the general public. TBL considers the broader concept of “stakeholder,” which includes anyone affected by the firm’s actions and that has a “stake” in their outcomes (Norman and MacDonald, 2004).

TBL includes two basic assumptions. First, any firm using the TBL approach to measure its three dimensions of performance must comply with different regulations and meet its legal obligations. Second,

firms should tangibly demonstrate their social and environmental commitment and accept a higher level of obligation and moral responsibility.

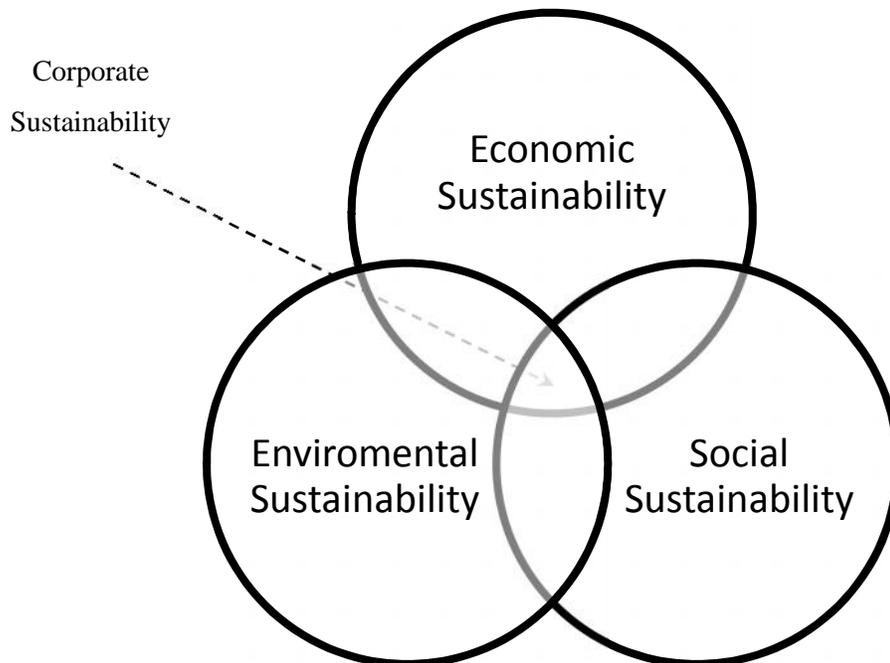
Gladwin et al. (1995) argued that the main difference between this corporate sustainability concept and orthodox management theories on firm performance is the realization that economic sustainability on its own cannot satisfy the corporation's overall sustainability. In the short term, economic sustainability can succeed; however, over the long term, sustainability requires the simultaneous satisfaction of all three dimensions (see Figure 7).

Elkington's (1998) three dimensions of the "triple bottom line" concept are interrelated and influence each other in multiple ways. In recent years, firms have overemphasized short-term gains by concentrating on quarterly results (as determined by stock market indicators that interpret performance) rather than the foundation for long-term success. Obsession with quick wins (i.e., short-term profits, higher share value) works against the foundation of sustainability, which calls for meeting stakeholders' current and future needs (as stated in Brundtland's (1987) work). Short-term gains are valued more than the long-term costs of social and environmental issues as economic discount rates treat spending on environmental or social enhancement costs as expenses rather than capital expenditures. The market tends to evaluate economically sustainable firms differently.

An economically sustainable firm consistently produces above average returns and guarantees that it has sufficient cash flow to ensure liquidity. However, an environmentally sustainable firm uses natural resources less quickly than they are naturally reproduced (or at a rate below a substitute's development). These firms monitor emissions produced by their operations to ensure that they do not exceed the maximum amount that the natural system can absorb and assimilate. These firms tend not to engage in activities that might degrade the ecosystem. A socially sustainable firm adds value to its communities by

increasing human capital used and furthering societal capital through individual partners. It manages social capital to clearly demonstrate its motivations to stakeholders, who can broadly agree with the company's value system.

Figure 7: Elkington's three dimensions of the 'triple-bottom-line'



Adapted from Elkington (1998)

TBL is deeply rooted in stakeholder theory and was first introduced by Freeman back in 1984. TBL provides firms with a different perspective on the measurement of its performance. Stakeholders include government and local authorities but not limited to entities or persons like employees and vendors. Based on this definition, TBL forces many organizations to look at the bigger picture. Firm responsibility involves more than understanding the economic aspects of developing products and/or services and complying with regulatory standards to achieve pre-defined profit margins. TBL looks at social and

environmental aspects of performance on top of firm's economic performance. Some of the triple-bottom-line generic performance measures are presented (see Table 7).

Table 7: Triple-bottom-line Generic Performance Measures

Triple Bottom Line	Performance Measurement
Economic	Sales growth Profit growth Return on equity Return on assets Gearing
Social	Lost time injury frequency Reliability of supply Responsiveness Overall customer satisfaction Sponsorship Education
Environment	EMS plants certified Spillages Nitrogen discharge Suspended solids discharge Wastewater reuse

Economic performance tries to measure the firm's use of its assets and precisely quantifies information about economic issues. Social performance measures a specific firm's working within a certain value chain impact on the society where it is located. Environmental performance measures the degree of consumption of the natural resources used by a firm in its day to day operations. Measures developed by different organizations and shared as best practice can be readily transferred to other organizations; however, social and environment performance are typically unique to each organization and difficult to quantify. Therefore, measuring economic performance when compared to social and environmental performance measurement is pretty straight forward. TBL has not been effectively established as an organizational performance system, as it is viewed as too complex when compared with fundamental

economic concepts that dominate management's way of thinking; however, it is the most comprehensive framework developed to date.

Based on the above argument, and to maintain interest in the widest stakeholder view and impact on our current generation and future cohorts, we will use TBL to measure sustainable organizational performance. Firms that attempted to measure their TBL environmental performance dimension were able to adopt internationally recognized, industry-certified environmental management systems (EMSs), such as ISO. EMS can help organizations to develop environmental policies, implement adequate procedures, and communicate results. The process typically involves setting SMART objectives and achievable targets for reducing environmental footprints and then monitoring performance. ISO 14001 is the most popular EMS scheme. Introduced in 1996, more than 36,000 ISO certificates have been awarded to organizations in 112 countries. Fryxell and Szeto (2002) argued that more firms are standardizing their environmental measurement systems (e.g., ISO 14001) to meet different stakeholders' requirements. They use these systems to report environmental performance and respond to community demands to become more transparent. According to Fryxell and Szeto (2002), the ISO 14001 certificate acknowledges that the certified organization has an EMS; it confirms the measurable objective to address environmental issues.

2.4 Relationship between Corporate Sustainability Strategies and Firm Performance

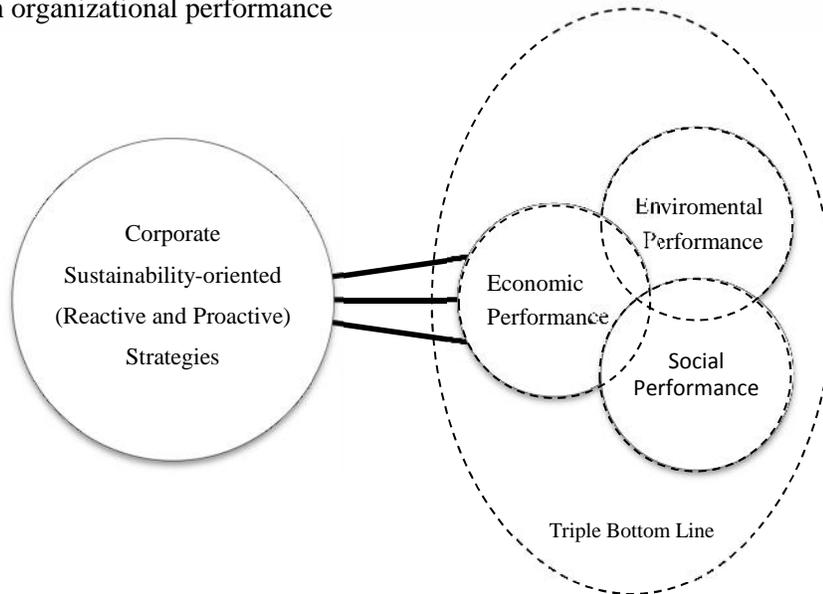
Measuring a firm's sustainability-related performance is not always easy. As stated in the previous section, some impacts on environmental and social capital are difficult to measure. Furthermore, firms seldom develop new performance measures that have no precedents. Orlitzky et al. (2003) suggest that companies should use standard measures of financial performance, such as costs, turnover, margins, risks, reputation, and other intangibles, as well as common measures of organizational performance. Similarly, Hahn et al. (2010) propose a single monetary indicator (based on opportunity costs) called sustainable

added value to measure the value created by a firm when it reduces or increases the use of different environmental and social resources. Sustainable added value also helps to account for eco- and socio-efficiency, as well as eco- and socio-effectiveness.

Various researchers have described the contribution to shareholder value and firm value when an organization takes social and environmental responsibility. Corporate sustainability appears to pay off, such as in the cases presented in salzmann et al. (2005) and Willard (2005), but many mainstream managers and CEOs have yet to be convinced. However, key efforts have been made to understand the impact of corporate sustainability strategies on organizational performance (Abu Bakar and Ameer, 2011; Ben Brik et al., 2011; Boehe and Barin Cruz, 2010; Branzei et al., 2004; Chan, 2005; Cheung et al., 2010; Clemens, 2006; Dowell et al., 2000; Fryxell and Szeto, 2002; Huang and Kung, 2010; Li and Zhang, 2010; Mishra and Suar, 2010; Muller and Kolk, 2010; Peng and Lin, 2008; Rettab et al., 2009; Wagner, 2010; Zeng et al., 2010; Zhu et al., 2007); Figure 8 depicts a sketch of the relationship.

A study by Abu Bakar and Ameer (2011) of a sample of listed companies in Malaysia indicated that the readability of corporate social responsibility (CSR) communication (i.e., reactive sustainable disclosure strategy) is positively related to organizational financial performance in terms of profitability and liquidity and negatively related to financial gearing. The same study also indicated that readability of CSR communication is positively related to organizational market-based performance in terms of Tobin's q, which is represented by the ratio of the firm's market value (total shares issued) divided by the firm's existing assets replacement cost.

Figure 8 – Proposed Framework used in testing the relationship between corporate sustainability strategies on organizational performance



Ben Brik, Rettab, and Mellahi (2011) found that, in a sample of companies drawn from the membership database of the Dubai Chamber of Commerce and Industry (DCCI), CSR—including community responsibility, environmental responsibility, employee responsibility, investor responsibility, customer responsibility, and supplier responsibility (i.e., proactive sustainability-oriented strategy)—is positively related to business performance in terms of financial performance, employee commitment, and corporate reputation. Another study conducted on Brazilian firms (Boehe and Barin Cruz, 2010) demonstrated a significant positive relationship between CSR in terms of product differentiation and export performance improvement. A study of medium and large Shanghai enterprises (Branzei, Ursacki-Bryant, Vertinsky, and Zhang, 2004) also found that structural formalization of environmental responsibilities (i.e., reactive sustainability-oriented strategy) had a significant impact on a firm’s environmental performance. Corporate environmental strategies, which were measured in terms of a firm’s involvement in 10 major environmental management activities, had a positive relationship with the firm’s financial performance,

which was measured in terms of returns on investment, earnings growth, sales growth, and market share change (Chan, 2005). Moreover, the study assures that corporate environmental strategies, which were measured in terms of a firm's involvement in 10 major environmental management activities, had a positive relationship with the firm's environmental performance, which was measured in terms of complying with environmental regulations; limiting environmental impact beyond compliance; preventing and mitigating environmental crises; and educating employees and the public about the environment (Chan, 2005). Cheung, Tan, Ahn, and Zhang (2010) demonstrated that CSR adopted by major Asian firms, which involved implementing explicit policies that emphasized strict ethical behaviour; not employing the under-aged; implementing explicit equal employment policies; adhering to specific industry guidelines on sourcing materials; implementing explicit policies on environmental responsibility; and abstaining from dealing with countries where leaders lack legitimacy, is positively related to a firm's financial performance in terms of debt-equity ratio, return on equity, current asset ratio, and sales growth rate. A study by Clemens (2006) of small firms operating in the US steel industry indicated that a firm's green expenditures strategies, which are measured in terms of green effectiveness, responsiveness, conscientiousness, and investment strategy, is significantly related to financial performance in terms of Profitability. Dowell, Hart, and Yeung (2000) found that a sample of firms from US Standard and Poor's 500 list of corporations that adopted stringent global environmental standards versus those that adopted local environmental standards had a greater correlation coefficient with their organizational market-based performance measured in terms of Tobin's q. Fryxell and Szeto (2002) examined a sample of 29 ISO 14001 certified facilities in Hong Kong and found that facility environmental performance improved as a result of obtaining ISO 14001 certification. The ISO 14001 certification helped firms to establish an environmental department that was primarily responsible for developing and establishing an environmental management system (EMS). Drafting a policy statement is

one of the most critical requirements for an EMS. The newly established management function is required to determine and implement the organization's environmental policy, identify environmental aspects and impacts, formulate a management review statement, and assure the firm's regulatory compliance. These proactive strategies were found to be positively related to the firm's environmental performance. Huang and Kung (2010) argued that, in a sample of firms listed on the Taiwan Stock Exchange (TWSE), there is no apparent relationship between the firm's environmental disclosure strategy, which mitigates stakeholder environmental pressure in advance of future stricter environmental regulations or legislation, and its financial performance in terms of financial leverage ratio, which is measured by earnings before interest and taxes (EBIT) divided by EBIT minus interest expense as of fiscal year-end. However, they found a significant positive relationship between the same environmental disclosure strategy and the firm's market-based performance in terms of market share, measured as net sales divided by total industry sales. They also illustrated that there is a weak relationship between the firm's environmental disclosure strategy and its financial performance in terms of profitability as total return on assets, which is measured as the ratio of income before extraordinary items and average assets as of fiscal year-end. Li and Zhang (2010) argued that CSR using an index of 36 questions that comprises eight categories (environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics) is positively associated with a firm's financial performance in terms of total assets, which is measured as the log form of total assets and financial leverage (measured as total debt divided by total assets). However, the study found that the relationship between CSR using the same index and a firm's market-based performance in terms of Tobin's q, which is measured as the sum of market value and book value of debts divided by total assets, is weak and has a negative direction. Another study conducted by Mishra and Suar (2010) of a sample of Indian firms found a significant positive relationship between CSR as a comprehensive measure for each primary stakeholder group

incorporating corresponding social, ethical, legal, and economic issues derived from local and global standards and the firm's financial performance measured in terms of industry-adjusted ROA and its non-financial performance measured in terms of a 12-item scale: (1) sales growth rate, (2) market share, (3) operating profits, (4) workplace relations, (5) cash flow from operations, (6) return on investment, (7) new product development, (8) market development, (9) research and development, (10) cost reduction programs, (11) personnel development, and (12) employee health and safety. Muller and Kolk (2010) analyzed a sample of 121 Mexican companies (28 MNE subsidiaries and 93 locally-owned firms) and found a strong relationship between the firm's focus on regulation (a reactive sustainability-oriented strategy), management's commitment to ethics (a proactive sustainability-oriented strategy), and the firm's social performance in terms of environmental performance, community relations, and labour relations. Another study by Peng and Lin (2008) on a sample of 101 Taiwanese firms, which are listed in the top 1000 manufacturing firms and have invested in China, confirmed a positive and significant relationship between the green management approach (GMA) adopted by firms and their green production (GP), green R&D (GRD), and green marketing (GM) strategies. This illustrates that higher levels of green management adoption strategies mean greater subsidiary performance. Rettab, Brik, and Mellahi (2009) deduced a positive relationship between CSR measured using a 26-item scale for six practices (community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, customer responsibilities, and supplier responsibilities) and the firm's financial performance, employee commitment, and corporate reputation among 280 firms working in Dubai. Another study conducted by Wagner (2010) on US firms in Standard and Poor's 500 index found a relatively low and positive correlation coefficient between corporate sustainability, environmental, and social strategy measures using Kinder Lydenberg Domini (KLD) rating data with Compustat firm-level data, which examined different factors including the natural environment, characteristics of the firm's

products, community aspects, diversity issues, employee relations, human rights concerns, and corporate governance, and the firm's market-based performance, which was measured using Tobin's q. Zeng, Meng, Yin, Tam, and Sun (2010) also conducted research on 125 companies from different industrial sectors listed in the Directory of Audited Enterprises of Cleaner Production in China and found that a cleaner production strategy with low-cost schemes is highly correlated with a firm's financial performance, which is measured in terms of its profitability, increase rate of net profit, and return on equity, while relatively lower with respect to its non-financial performance, which was measured in terms of its market share, corporate reputation, and shareholders' confidence. On the other hand, a cleaner production strategy with high-cost schemes is almost as high in its correlation coefficient with a firm's financial performance when measured under the same terms and relatively low as well with respect to its non-financial performance when measured under the same terms. These results were a bit surprising, as they indicate that, regardless of the value, there is high correlation with financial performance and low correlation with non-financial performance. Finally, Zhu, Sarkis, and Lai (2007) analyzed 89 automotive enterprises within China and found that firms adopting green supply chain management (GSCM) strategies, such as internal environmental management awareness, green purchasing, building relationships with customers and cooperation with international partners, investing in recovery and development of recycled materials, and eco-design, are highly correlated with the firm's environmental performance, positive economic performance, negative economic performance, and operational performance. Table 1 provides a brief summary of previous empirical studies that investigated the relationship between corporate sustainability-oriented strategies and organizational performance. Our review of some key studies on the relationship between corporate sustainability strategies and organizational performance indicates positive, negative, mixed, or non-significant results (see Table 8).

Table 8: key studies on the relationship between corporate sustainability strategies and organizational performance

Author (Year)	Sustainability- Oriented Strategy	Strategy Type (Proactive/Reactive)	Performance Measure	Extracted Statistical Data		Meta-Analysis Calculations		
				Correlation Coefficient	Sample size	Calculated Effect Size (<i>ES</i>)	Calculated Standard Error (<i>SE</i>)	Calculated Weight ()
Abu Bakar, A. S., and Ameer, R. (2011)	Readability of Corporate Social Responsibility (CSR) Communication (disclosure)	Reactive	Financial Performance (Profitability)	0.147	333	0.15	0.06	330
Abu Bakar, A. S., and Ameer, R. (2011)	Readability of Corporate Social Responsibility (CSR) Communication (disclosure)	Reactive	Financial Performance (Liquidity)	0.128	333	0.13	0.06	330
Abu Bakar, A. S., and Ameer, R. (2011)	Readability of Corporate Social Responsibility (CSR) Communication (disclosure)	Reactive	Financial Performance (Financial Gearing)	-0.0702	333	-0.07	0.06	330
Abu Bakar, A. S., and Ameer, R. (2011)	Readability of Corporate Social Responsibility (CSR) Communication (disclosure)	Reactive	Market-Based Performance (Tobin's q)	0.118	333	0.12	0.06	330
Ben Brik, A., Rettab, B., and Mellahi, K. (2011)	CSR (including community responsibility, environmental responsibility, employee responsibility, investor responsibility, customer responsibility, and supplier responsibility)	Proactive	Business Performance (Financial Performance, Employee Commitment, and Corporate Reputation)	0.50	280	0.50	0.06	277
Boehe, D., and Barin Cruz, L. (2010)	CSR (Product Differentiation)	Proactive	Export Performance Improvement	0.19	252	0.19	0.06	249
Branzei, O., Ursacki-Bryant, T. J., Vertinsky, I., and Zhang, W. (2004)	Structural Formalization of Environmental Responsibilities	Reactive	Environmental Performance	0.279	360	0.28	0.05	357
Chan, R. Y. K. (2005)	Corporate Environmental	Proactive	Financial Performance	0.24	332	0.24	0.06	329

	Strategies (involvement in 10 major environmental management activities)		(returns on investment, earnings growth, sales growth, and market share change)					
Chan, R. Y. K. (2005)	Corporate Environmental Strategies (involvement in 10 major environmental management activities)	Proactive	Environmental Performance (complying with environmental regulations; limiting environmental impact beyond compliance; preventing and mitigating environmental crises; and educating employees and the public about the environment)	0.26	332	0.26	0.06	329
Cheung, Y., Tan, W., Ahn, H., and Zhang, Z. (2010)	CSR (explicit policy emphasizing strict ethical behavior; not employing the under-aged; explicit equal employment policy; adherence to specified industry guidelines on sourcing of materials; explicit policy on environmental responsibility; abstaining from countries where leaders lack legitimacy)	Reactive	Financial Performance (debt-equity ratio)	0.005	1014	0.01	0.03	1011
Cheung, Y.,	CSR (explicit policy	Reactive	Financial	0.037	1034	0.04	0.03	1031

Tan, W., Ahn, H., and Zhang, Z. (2010)	emphasizing strict ethical behavior; not employing the under-aged; explicit equal employment policy; adherence to specified industry guidelines on sourcing of materials; explicit policy on environmental responsibility; abstaining from countries where leaders lack legitimacy)		Performance (return on equity)					
Cheung, Y., Tan, W., Ahn, H., and Zhang, Z. (2010)	CSR (explicit policy emphasizing strict ethical behavior; not employing the under-aged; explicit equal employment policy; adherence to specified industry guidelines on sourcing of materials; explicit policy on environmental responsibility; abstaining from countries where leaders lack legitimacy)	Reactive	Financial Performance (current asset ratio)	-0.090	919	-0.09	0.03	916
Cheung, Y., Tan, W., Ahn, H., and Zhang, Z. (2010)	CSR (explicit policy emphasizing strict ethical behavior; not employing the under-aged; explicit equal employment policy; adherence to specified industry guidelines on sourcing of materials; explicit policy on	Reactive	Financial Performance (sales growth rate)	0.035	941	0.04	0.03	938

	environmental responsibility; abstaining from countries where leaders lack legitimacy)							
Clemens, B. (2006)	Firms' green effectiveness, responsiveness, conscientiousness and investment strategy (Green Expenditures)	Proactive	Financial Performance (Profitability)	0.42	76	0.42	0.12	73
Dowell, G., Hart, S., and Yeung, B. (2000)	Adopting Local Environmental Standards	Reactive	Market-Based Performance (Tobin's q)	0.3043	107	0.30	0.10	104
Dowell, G., Hart, S., and Yeung, B. (2000)	Adopting Stringent Global Environmental Standards	Proactive	Market-Based Performance (Tobin's q)	0.3680	107	0.37	0.10	104
Fryxell, G. E., and Szeto, A. (2002)	Regulatory Compliance	Reactive	Environmental Performance (The environmental performance of my facility has improved as a result of obtaining certification to ISO 14001)	0.300	29	0.30	0.20	26
Huang, C., and Kung, F. (2010)	Environmental disclosure (mitigate stakeholder environmental pressure in advance of stricter environmental regulations or legislation in the future)	Proactive	Financial Performance (Financial leverage ratio, earnings before interest and taxes (EBIT) divided by EBIT minus interest expense as of fiscal year-end)	-0.120	759	-0.12	0.04	756

Huang, C., and Kung, F. (2010)	Environmental disclosure (mitigate stakeholder environmental pressure in advance of stricter environmental regulations or legislation in the future)	Proactive	Market-Based Performance (Market share, measured as net sales divided by the total sales of the industry)	0.320	759	0.32	0.04	756
Huang, C., and Kung, F. (2010)	Environmental disclosure (mitigate stakeholder environmental pressure in advance of stricter environmental regulations or legislation in the future)	Proactive	Financial Performance (Profitability, total return on assets, measured as the ratio of income before extraordinary items and average assets as of fiscal year-end)	0.030	759	0.03	0.04	756
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	Reactive	Financial Performance (ROE, net income divided by total equity)	0.1590	692	0.16	0.04	689
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees,	Reactive	Financial Performance (Total Asset, the log form of total assets)	0.2930	692	0.29	0.04	689

	employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)							
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	Reactive	Financial Performance (Leverage, total debt divided by total assets)	0.0170	692	0.02	0.04	689
Li, W., and Zhang, R. (2010)	Corporate Social Responsibility (CSR) (using index consisting of 36 questions into eight categories: environment, energy saving, employees, employment and promotion, social problems, consumer satisfaction, other stakeholders, law, and business ethics)	Reactive	Market-Based Performance (Tobin's q = the sum of market value and book value of debts divided by total assets)	-0.117	692	-0.12	0.04	689
Mishra, S., and Suar, D. (2010)	Corporate Social Responsibility (CSR) (a comprehensive measure for each primary stakeholder group incorporating corresponding	Proactive	Financial Performance (industry-adjusted ROA)	0.41	150	0.41	0.08	147

	social, ethical, legal, and economic issues derived from local and global standards)							
Mishra, S., and Suar, D. (2010)	Corporate Social Responsibility (CSR) (a comprehensive measure for each primary stakeholder group incorporating corresponding social, ethical, legal, and economic issues derived from local and global standards)	Proactive	Non Financial Performance (A 12-item scale (1) sales growth rate, (2) market share, (3) operating profits, (4) workplace relations, (5) cash flow from operations, (6) return on investment, (7) new product development, (8) market development, (9) research and development, (10) cost reduction programs, (11) personnel development, and (12) employee health and safety)	0.46	150	0.46	0.08	147
Muller, A., and Kolk, A. (2010)	Focus on Regulation	Reactive	Social Performance (Environmental Performance, Community Relations, and Labor Relations)	0.400	121	0.40	0.09	118
Muller, A., and Kolk, A. (2010)	Management Commitment to Ethics	Proactive	Social Performance (Environmental	0.240	121	0.24	0.09	118

			Performance, Community Relations, and Labor Relations)					
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green Production (GP) Strategy	Reactive	Financial Performance (facilitating marketing and product benefits, revenue improvement by performing environmental improvement projects, competitiveness enhancement in local market, and competitiveness enhancement in export market)	0.40	101	0.40	0.10	98
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green Production (GP) Strategy	Reactive	Non Financial Performance (public relationship and corporate image improvement, and customers satisfaction improvement)	0.36	101	0.36	0.10	98
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green R&D (GRD) Strategy	Reactive	Financial Performance (facilitating marketing and product benefits, revenue improvement by performing environmental	0.50	101	0.50	0.10	98

			improvement projects, competitiveness enhancement in local market, and competitiveness enhancement in export market)					
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green R&D (GRD) Strategy	Reactive	Non Financial Performance (public relationship and corporate image improvement, and customers satisfaction improvement)	0.45	101	0.45	0.10	98
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green marketing (GM) Strategy	Reactive	Financial Performance (facilitating marketing and product benefits, revenue improvement by performing environmental improvement projects, competitiveness enhancement in local market, and competitiveness enhancement in export market)	0.46	101	0.46	0.10	98
Peng, Y., and Lin, S. (2008)	Green Management Adoption (GMA) Green marketing (GM) Strategy	Reactive	Non Financial Performance (public relationship and corporate image	0.42	101	0.42	0.10	98

			improvement, and customers satisfaction improvement)					
Rettab, B., Brik, A., and Mellahi, K. (2009)	Corporate Social Responsibility (CSR) (a 26-item scale for six practices: community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, customer responsibilities, and supplier responsibilities)	Proactive	Financial Performance	0.300	280	0.30	0.06	277
Rettab, B., Brik, A., and Mellahi, K. (2009)	Corporate Social Responsibility (CSR) (a 26-item scale for six practices: community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, customer responsibilities, and supplier responsibilities)	Proactive	Employee Commitment	0.440	280	0.44	0.06	277
Rettab, B., Brik, A., and Mellahi, K. (2009)	Corporate Social Responsibility (CSR) (a 26-item scale for six practices: community responsibilities, environmental responsibilities, employee responsibilities, investor responsibilities, investor responsibilities, and customer responsibilities)	Proactive	Corporate Reputation	0.410	280	0.41	0.06	277

	responsibilities, customer responsibilities, and supplier responsibilities)							
Wagner, M. (2010)	Corporate Sustainability Strategy (natural environment, characteristics of the firm's products, community aspects, diversity issues, employee relations, human rights concerns and corporate governance)	Proactive	Market-Based Performance (Tobin's q)	0.15	2478	0.15	0.02	2475
Wagner, M. (2010)	Corporate Environmental Strategy (natural environment, characteristics of the firm's products, community aspects, diversity issues, employee relations, human rights concerns and corporate governance)	Proactive	Market-Based Performance (Tobin's q)	0.16	2478	0.16	0.02	2475
Wagner, M. (2010)	Corporate Social Strategy (natural environment, characteristics of the firm's products, community aspects, diversity issues, employee relations, human rights concerns and corporate governance)	Proactive	Market-Based Performance (Tobin's q)	0.10	2478	0.10	0.02	2475
Zeng, S. X., Meng, X. H., Yin, H. T.,	Cleaner Production (low-cost schemes) Strategy	Proactive	Financial Performance (Profitability,	0.87	125	0.87	0.09	122

Tam, C. M., and Sun, L. (2010)			Increase rate of net profit, and Return on equity)					
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L. (2010)	Cleaner Production (high-cost schemes) Strategy	Proactive	Financial Performance (Profitability, Increase rate of net profit, and Return on equity)	0.26	125	0.26	0.09	122
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L. (2010)	Cleaner Production (low-cost schemes) Strategy	Proactive	Non Financial Performance (Market share, Corporate reputation, and Shareholders' confidence)	0.39	125	0.39	0.09	122
Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., and Sun, L. (2010)	Cleaner Production (high-cost schemes) Strategy	Proactive	Non Financial Performance (Market share, Corporate reputation, and Shareholders' confidence)	0.77	125	0.77	0.09	122
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Proactive	Environmental Performance	0.618	89	0.62	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Proactive	Positive Economic Performance	0.540	89	0.54	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal	Proactive	Negative Economic Performance	0.394	89	0.39	0.11	86

	Environmental Management Awareness)							
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Internal Environmental Management Awareness)	Proactive	Operational Performance	0.534	89	0.53	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Proactive	Environmental Performance	0.379	89	0.38	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Proactive	Positive Economic Performance	0.398	89	0.40	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Proactive	Negative Economic Performance	0.318	89	0.32	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Green purchasing)	Proactive	Operational Performance	0.406	89	0.41	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Proactive	Environmental Performance	0.546	89	0.55	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Proactive	Positive Economic Performance	0.431	89	0.43	0.11	86
Zhu, Q.,	Green Supply Chain	Proactive	Negative	0.409	89	0.41	0.11	86

Sarkis, J., and Lai, K. (2007)	Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)		Economic Performance					
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Relationship with Customers and Cooperation with International Partners)	Proactive	Operational Performance	0.505	89	0.51	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Proactive	Environmental Performance	0.393	89	0.39	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Proactive	Positive Economic Performance	0.204	89	0.20	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Proactive	Negative Economic Performance	0.141	89	0.14	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (Investment Recovery and Development of Recycled material Markets)	Proactive	Operational Performance	0.401	89	0.40	0.11	86

Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Proactive	Environmental Performance	0.440	89	0.44	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Proactive	Positive Economic Performance	0.534	89	0.53	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Proactive	Negative Economic Performance	0.282	89	0.28	0.11	86
Zhu, Q., Sarkis, J., and Lai, K. (2007)	Green Supply Chain Management (GSCM) Strategy, (eco-design)	Proactive	Operational Performance	0.514	89	0.51	0.11	86

The review shows that while a number of studies reported either a negative relationship (Abu Bakar and Ameer, 2011; Cheung et al., 2010; Huang and Kung, 2010; Li and Zhang, 2010) or no significant association (Cheung et al., 2010; Li and Zhang, 2010) between corporate sustainability strategies and an organization's overall performance, most evidence reported a successful relationship (Ben Brik et al., 2011; Boehe and Barin Cruz, 2010; Branzei et al., 2004; Chan, 2005; Clemens, 2006; Dowell et al., 2000; Fryxell and Szeto, 2002; Huang and Kung, 2010; Mishra and Suar, 2010; Muller and Kolk, 2010; Peng and Lin, 2008; Rettab et al., 2009; Wagner, 2010; Zeng et al., 2010; Zhu et al., 2007). However, as noted above, one cannot generalize the above explanations without additional research. Also, the relationship is still in its infancy. Most theories that attempt to describe the relationship between corporate sustainability strategies and a company's triple bottom line also make the assumption that there is insufficient evidence to produce generalizable conclusions. At this point, there is very little known about fundamental issues, such as the strength of the relationship between corporate sustainability strategies and firm performance, although this research field was promoted by scholars and policymakers. In this study, we examine whether corporate sustainability strategies have an impact on overall organizational performance.

Hypothesis 1: Organizations adopting corporate sustainability strategies have improved their "triple bottom line."

Based on the previous argument, we refined the research stream, which looks at the association involving corporate sustainability strategies and organizational performance, by shifting from a broad inquiry of whether corporate sustainability strategies impact performance to examining the association of corporate sustainability strategies to three targeted aspects of organizational performance: environmental, social, and economical. The performance of sustainable businesses must therefore be framed and measured in economic, environmental, and social terms. This three-pronged focus, and the inclusion of stakeholder-related concerns, are hallmarks of corporate sustainability and have implications for the strategic direction

of sustainable companies. In theory, environmental stewardship, social duty, and economic success can be embraced at the same time. However, developing one comprehensive sustainability strategy that can actually be implemented is definitely a challenge. Furthermore, which strategy can be implemented without facing some challenges? A business's strategic behaviour (reactive versus proactive) is a key determinant of overall organizational performance. Because of available market opportunities, we hypothesize that firms adopting proactive sustainability-oriented strategies are more likely to have a higher payoff than firms adopting reactive sustainability-oriented strategies.

Hypothesis 2: Adopting proactive sustainability-oriented strategies is associated with greater improvement in the firm's "triple bottom line" than adopting reactive sustainability-oriented strategies.

2.5 Summary

There has been extensive study of the relationship between corporate sustainability-oriented strategies and firm performance, but results are not yet conclusive. This can be attributed to the fact that the relationship is more complex than it seems. A business's strategic behaviour (reactive versus proactive) is a key determinant of overall organizational performance. Firms have begun to adopt proactive corporate sustainability strategies that contribute to their sustainable development goals. It is becoming more important to align a firm's self-interest with the greater public good such that it adds value to both the firm and society. Therefore, separately measuring the impact of different strategic behaviours (reactive versus proactive), as well as their impact on organizational performance, is critical in understanding which approach is more significant. It also helps in quantifying the value-creation process to the company adopting either sustainability-oriented strategic approach.

Chapter 3

3. Method

3.1 Introduction

This chapter has seven sub-sections. The first section describes how the systematic literature review was executed. The second section gives an overview on the meta-analytic techniques. The third section describes the inclusion criteria. Sub-section four and five illustrate the variables of interest used in the analysis. Sub-section six shows the data collected to test the hypotheses. The last section describes the analytical technique used to support the research argument.

3.2 Systematic Literature Review

To ensure that the articles used to conduct this research are adequately representative and complete, we used a systematic review methodology to create a dataset of articles and a meta-analysis statistical technique to conduct analysis. Tranfield et al. (2003) argued that medical researchers have employed this approach and it has more recently been adopted in the field of management. Denyer and Neely (2004) suggested that in order to reduce any researcher bias with regards to including or excluding a study, the systematic review technique adopts explicit procedures to eliminate such bias. To build the database, we performed an exhaustive literature search using ABI/Inform® (ProQuest), which provides access to more than 1,800 full text American and international business, environmental, economic, and policy-related journals; Thomson Reuters (formerly ISI) Web of Knowledge, which is the premier research platform for information in the sciences, social sciences, arts, and humanities; EBSCOhost®, which is the world's most used reference resource; and SciVerse Scopus®, which covers 16,500 peer-reviewed journals in the scientific, technical, medical, and social sciences (including arts and humanities). A systematic review

would normally begin with relevant keywords and search terms (Tranfield et al., 2003). We searched all databases for studies published prior to June 2012 using the search terms “sustainability strategies” and “corporate performance” in the title, abstract, or keywords. Later, we introduced other variants for the two terms. The term “corporate sustainability” is an evolution of more traditional phrases that describe ethical corporate practice. We then conducted an issue-by-issue search of 48 major journals in organizational behaviour, international business, management, marketing, and finance literature. These journals are commonly recognized as top-tier and primary outlets within the broad field of empirical corporate sustainability research (Sharma and Starik, 2002) and are often incorporated in similar systematic reviews (Cantor, 2008). We examined the reference sections of all major reviews of previously published research on the topic to identify any studies that might have been overlooked in the previous two stages. Through this search, we found special issues about sustainability-oriented strategies and corporate performance, such as Asian Business and Management Journal in 2008, Business Strategy and the Environment in 1995 and 2002, Corporate Social Responsibility and Environmental Management in 2007, Greener Management International in 2010 and 2006, Human Ecology Review in 2004, International Affairs in 2005, and Journal of Business Ethics in 2010, 2009, and 2002. To narrow the scope of the literature, we limited analysis to papers that were empirical in nature. Empirical approaches included primary or secondary data that were collected and analyzed for specific purposes, surveys, case studies, interviews, and experiments, as well as conceptual theory building and systematic literature reviews. We excluded papers that followed a non-empirical approach, such as mathematical modeling, and manuscripts that expressed opinions based on anecdotal evidence. This initial search revealed 106 relevant articles, and an additional 259 articles through expansion of the search to include special issues from other highly regarded journals. The manual review process of the literature identified 365 articles for initial inclusion in the literature database and helped to refine the keywords used for the second phase of the analysis. In

the second phase, we entered the basic bibliographic data, including, but not limited to, the publication year, article title, name of author/authors, name of journal, number of volume and issue, and number of pages, into a Microsoft Access database.

3.3 Meta-analytic Techniques

To evaluate our hypotheses, we relied on meta-analytic techniques that considered the aggregate relationship between sustainability-oriented strategies and corporate performance. This approach was used to integrate the entire body of corporate sustainability literature to offer more generalized insights regarding the relationship between sustainability strategies adopted by firms and their corresponding overall organizational performance.

3.4 Inclusion Criteria

The first step in preparing the meta-analysis involved determining the population of studies relevant for inclusion. For the purposes of this study, we categorized sustainability strategies according to standards established by the Institute for Economy and the Environment at the School of St. Gallen. Based on Dyllick et al. (1997) and Gminder et al. (2002), a firm's strategic behaviour is classified as either reactive or proactive. We relied on Sharma and Vredenburg's (1998) definition of a firm's behaviour. Based on their definition, a firm is proactive only if it exhibits a consistent pattern of voluntary actions across all dimensions relevant to its activities, which are not required to fulfill environmental regulations or respond to isomorphic pressures within the industry as standard business practices. On the other hand, a firm is reactive only if it emphasizes the reduction of operational, financial, and legal risks of accidents. Environmental accidents cannot be insured and can cause financial disruption, negative media exposure, and damaged reputations for these companies. These firms undertake voluntary initiatives to preserve and

restore the habitat and reduce waste, as opposed to proactive initiatives that involve controlling emissions and waste as per regulations, reducing material usage, innovating and developing less polluting products and services, and partnering with stakeholders for environmental preservation and social prosperity. Also, we used Elkington's (1998) TBL definition, which looks at social and environmental measures of performance on top of the economic measures that are typically used by most organizations. The population of sustainability strategies studies included local and regional SMEs, multinational corporations from emerging economies and developed nations, as well as different industrial sectors. We defined a firm's economic performance in terms of a firm's utilization of its own assets using different figures to quantify its economic issues in a precise and concentrated form (e.g., return on equity, debt ratio, current ratio). We defined a firm's environmental performance in terms of the amount of resources the firm uses in its operations (e.g., energy, land, water) and the by-products its activities create (e.g., waste, air emissions, chemical residues). Finally, we defined a firm's social performance in terms of the impact a firm (and its suppliers) has on the communities in which it works. These definitions focused the population of studies on those that demonstrated changes in actual or relative economic, environmental, and social performance. Our definition excluded studies that did not consider performance changes and eliminated studies that were employed at a regional or national level. The population was further limited to studies evaluating sustainability-oriented strategies that were adopted by business organizations and found to have either a fairly direct or relatively indirect impact on the firm's economic, environmental, or social performance. Suitable sustainability-related strategies studies were required to be published in a peer-reviewed journal. As such, they would have undergone extensive scrutiny by the scientific community.

Finally, there is inevitable selection bias associated with firms that adopt proactive sustainability strategies, as implementation of these strategies is voluntary across all performance dimensions relevant

to the firm's range of activities. In the presence of selection bias, estimating the relationship between sustainability-oriented strategies and the firm's economic, environmental, and social performance would lead to an error term that is correlated with the participation decision. An error term normally looks for the effects that are caused by all lost and improperly measured variables; correlated regressors that will end up proxying with unmeasured or missed factors. A two-stage estimation approach corrects for self-selection bias (Greene, 2000; Hunter, 1990 and 2004; Winkelmann, 2008). Applied to the sustainable strategy setting, the factors that determine sustainability-oriented strategies (first stage) are estimated simultaneously with the factors that determine its economic, environmental, and social performance (second stage). To account for selection bias in the meta-analysis, we restricted the population of eligible studies to scholarships that utilized these two-stage estimation procedures.

3.5 Operationalizing Corporate Sustainability Strategy and the triple bottom line concept

We could not find an existing questionnaire tool that effectively measured corporate sustainability strategies. Therefore, we used the initial exploratory phase of the research to define corporate sustainability strategies, and to identify the most suitable typology. The literature review demonstrated that the conception of corporate sustainability strategies indicated by the "IWOE approach" (as described by Dyllick and his collaborators) provides a well-differentiated explanation of strategies based on their underlying motivations. However, we relied on Sharma and Vredenburg's (1998) argument of a firm's behaviour. Their research described various concrete activities and processes that are appropriate for each firm's strategic behaviour. The concepts related to firm responsiveness supported the measurement of strategies through the indicators allocated to each corporate sustainability strategy type. We also compared the identified items to their relevant performance measures. The literature review, and the definition of corporate performance as determined by triple bottom line concept, suggested that

sustainability strategies have three distinct areas of impact: 1) financial impact; 2) environmental activities; and 3) social practices related to corporate employees and society in general. We developed a list of possible strategies for each area as a guide for selection. Table 9 shows different strategies and their allocation to each performance category within the firm's triple bottom line.

Table 9: different possible strategies and their allocation to each performance category within the firm's triple bottom line

Financial Performance	Environmental Performance	Social Performance
Definition of Organizational Principles / Mission Statement / Organizational Value	Definition of Organizational Environmental Principles / Environmental Mission Statement / Environmental Organizational Value	Definition of Organizational Social Principles / Social Mission Statement / Code of Conduct / Social Organizational Value
Process Management Systems in production and/or the organization	EMAS Environmental Management System	Employee Satisfaction Surveys
Quality Management System based on ISO 9001 (with or without certification) or similar	ISO 14001 Environmental Management System	Work-Family / Work-Life Balance Programs
Management System based on EFQM or similar	Environmental Impact Assessment	New Employee Motivation Programs
Values-Based Management	Definition of Measurable Environmental Objectives	Additional Fringe Benefits for Employees (beyond legal requirements)
Customer Satisfaction Surveys	Product Life-Cycle Analysis	Employee Suggestion Scheme
Satisfaction Surveys for Partners / Stakeholders	Environmental Risk Assessment (related to legislation)	Individual Work-Time Models
Benchmarking (Best-practice, data oriented)	Environmental Benchmarking	Individual Workplace Design
RandD / Innovation aimed at new, sustainability-related product features	Environmental Cost Accounting and/or Eco-controlling System	Child Care Facilities/Programs
Active support of research in the	Purchase of Emissions	Employee Training and

area of sustainability and/or engagement in sustainability-oriented projects	Certificates/CO Certificates	Development Programs
Sustainability-related Product Branding	Environmental Procurement Guidelines	Workplace Health Promotion
Sustainability-Marketing	Integrated Product Policy/IPP/Eco-design	Involvement of Employees in Decision-making
	Recycling Programs (for products)	Open Communication regarding Decision-making
	Reduction of Hazardous Materials Use / Production	Implementation of Social Accountability 8000, ISO 26000
	Research and Development Aimed at Pollution	Support / Sponsoring of Educational Activities
	Prevention and/or Product Recycling / Reuse	Sponsoring of Social Initiatives / Projects
	Environmental Marketing Tools	Regular Social Reporting
	Regular Environmental Reporting	Social Procurement Guidelines
	Regular Sustainability Reporting	Social Risk Assessment

3.6 Data

We identified studies that met our inclusion criteria by conducting an exhaustive literature search. We also explored cross-citations from previous studies. We identified and evaluated about 40 studies that evaluated the relationship between corporate sustainability-oriented strategies and firm performance using certain relevant characteristics that would support their inclusion in the meta-analysis. Eighteen studies met our selection criteria and were included in the analysis. This is a significant number as a meta-analysis requires as few as two qualifying studies, since statistical power is based on the data from the original studies (Lipsey, 2001). As the original studies evaluated more than 20,000 firms, there was sufficient statistical power in the meta-analysis to produce a meaningful conclusion about the overall efficacy of different sustainability-oriented strategies adopted by firms involved in this study. The 18

studies evaluated the three dimensions of performance measures using 64 different sustainability-oriented strategies. Twenty-two strategies were classified as reactive because they emphasized the reduction of operational, financial, and legal risks. Forty-five strategies were classified as proactive because the firms exhibited a consistent pattern of voluntary actions across all dimensions relevant to their activities; standard business practices did not require them to fulfill environmental regulations or respond to isomorphic pressures within the industry. Table 1 summarizes the studies in the meta-analysis, including the articles' details, strategy as dependent variable, performance category, how performance was measured, and empirical approach used. Table 8 summarizes the data used in meta-analysis calculations. It identifies the sustainability strategy adopted by the firm, which is also the independent variable, its type, whether reactive or proactive, performance measure, which is the dependent variable, the effect size and finally the weight for each performance measure.

3.7 Empirics

There are several advantages to using the meta-analytic approach. Meta-analysis focuses on the relative “size” of the observed effects rather than the underlying study statistics (regardless of their significance). Hedges and Olkin (1985) determined that meta-analysis corrects for sampling errors that are associated with differently sized studies. Sustainability strategies studies with fewer observations are more susceptible to sampling errors that could weaken the derived inferences. According to Hunter (1990) and (2004), using meta-analysis inverse variance weight on the “effect size” observed in individual studies based on sample size reduces the weight of small sample studies and the sampling error in the comparison. Lipsey (2001) argued that meta-analysis is ideal for comparing multiple quantitative studies that evaluate related dependent variables. Hartung (2008) concluded that one can make comparisons

whether or not the relationships in the original study are statistically significant. He also argued that the meta-analytical approach does not require dependent variables to be identical.

According to Glass (1981) and Hedges and Olkin (1985), variability among dependent variables occurs because candidate studies often use different measures for the same variable. Eddy (1992) and Lipsey (2001) argued that variability is expected between study features (including research models and data sources) and their attributes, so it is increasingly acceptable to include more divergent study characteristics.

Hunter (1990) and (2004), Lipsey (2001), and Hartung (2005) concluded that published meta-analytic research uses broad measures of dependent and independent variables. Related to the sustainability-oriented strategies, the population of studies that evaluate different performance categories tend to vary based on the triple bottom line concept. Performance measures include financial, environmental, and social performance. Financial performance was measured in terms of returns on investment, earnings growth, sales growth, market share change (Chan, 2005), profitability, liquidity, financial gearing (Abu Bakar and Ameer, 2011), debt-equity ratio, return on equity, current asset ratio, and sales growth rate (Cheung, Tan, Ahn, and Zhang, 2010). Environmental performance was measured in terms of compliance with environmental regulations, imposition of limits on environmental impact beyond compliance, prevention and mitigation of environmental crises, education of employees and the public about the environment (Chan, 2005), and development and establishment of an environmental management system (Fryxell and Szeto, 2002). Social performance was measured in terms of community relations, labour relations (Muller and Kolk, 2010), workplace relations, new product development, market development, personnel development, employee health and safety (Mishra and Suar, 2010), public relationships, corporate image improvement, and customer satisfaction improvement (Peng and Lin, 2008). With

respect to categorization of proactive versus reactive sustainability-oriented strategies, all studies employed either stakeholder theory (Freeman, 1984) or resource-based theory (Barney, 1991; Hart, 1995) to support the adoption of each strategy type through the use of a proper correlation coefficient to establish and compare predicted probability. This enabled comparison of reactive and proactive sustainability-oriented strategies.

The meta-analysis studies permitted direct comparison using estimated effect size (ES). To arrive at these estimations, we used the regression coefficient r (i.e., the Pearson product moment coefficient) from previous studies to calculate ES, which is an index that measures the magnitude of the treatment effect. Unlike significance tests, this index is independent of sample size.

Meta-analysis uses ES to summarize the findings of previous research. It is used to characterize the critical differences in performance, which is a continuous variable due to adoption of proactive or reactive sustainability-oriented strategies, which is a dichotomous variable). It is calculated using the following formula (Lipsey, 2001):

$$\bar{S} = r$$

Cooper and Hedges (1994) argued that as the population sample size increases, the r distribution becomes more skewed. A weight (ω) is assigned to each study to account for any errors due to incorrect measurement of the sampling procedures. We calculate this weight as a function of the sample size used in these studies by integrating the random effects constant (n) that accounts for variability across the observed effects. Lipsey's (2001) formula was used to calculate the sample weight:

$$\omega = n - 3$$

The standard error (SE) is a direct index of the ES precision, which is based on Lipsey (2001). SE is often used to create confidence intervals. These standard errors are not usually included in studies under investigation. The SE calculation uses the Fisher Zr transformed correlation coefficients, and is as follows:

$$SE = \sqrt{\frac{1}{n - 3}}$$

We performed a homogeneity test to assess whether the studies estimated the same population, using Q statistic and involving a chi-square distribution. This test assesses data variability and defines the underlying model used to calculate the effect size (Lipsey, 2001). A positive homogeneity test would indicate similarity across the studies' measures and requires meta-analytic estimation using a fixed effects model. Otherwise, we should use a random effects model.

Our hypotheses differ from typical empirical evaluations, and are tested using results from previous studies. Meta-analysis supports new findings and adds quantitative insights based on the comparisons from original studies involved in the analysis.

To evaluate Hypothesis 1, we assessed all studies without evaluating their underlying strategy type. The results of our homogeneity test ($Q = 733.32$) indicated that we should apply a random effects model to evaluate the relationship between corporate sustainability-oriented strategies and firm performance (see Table 10).

Table 10: SPSS Meta-analysis Output Results

Studies included	Number of measures	Meta-analysis model	Meta-analysis outcome	Standard error	Z-score	CI (95%)	Test of homogeneity
All	64	Random effects	0.297	0.024	12.434	0.250 to 0.344	Q = 733.32
Reactive strategies	22	Random effects	0.182	0.036	5.10	0.112 to 0.253	Q = 215.93
Proactive strategies	42	Random effects	0.359	0.030	12.037	0.300 to 0.417	Q = 428.74

To evaluate Hypothesis 2, we divided the studies into two subsets – reactive strategies and proactive strategies. A business’s strategic behaviour (reactive versus proactive) is a key determinant of overall organizational performance. Firms are now adopting proactive corporate sustainability strategies that contribute to their sustainable development goals. It is becoming more important to align a firm’s self-interest with the greater public good because it adds value to both the firm and society. Therefore, measuring the separate impacts of different strategic behaviours (reactive versus proactive), as well as their impact on organizational performance, is required to understand which approach is more significant.

It also helps to quantify the value-creation process to the company adopting either sustainability-oriented strategic approach. According to Sharma and Vredenburg’s (1998) research, a firm is proactive only if it demonstrates a consistent pattern of voluntary actions across all dimensions relevant to its range of activities, which does not involve fulfilling environmental regulations or responding to isomorphic pressures within the industry as standard business practices.

A firm is reactive only if it emphasizes reducing operational, financial, and legal risks of accidents. Environmental accidents cannot be insured and can produce financial disruption, negative media

exposure, and damaged reputations. These firms voluntarily seek to preserve and restore the habitat and reduce waste, as opposed to proactive initiatives that involve controlling emissions and waste based on regulatory requirements, reducing material usage, innovating and developing less polluting products and services, and forming partnerships with stakeholders for environmental preservation and social prosperity.

We evaluated 22 reactive strategies, including the CSR disclosure strategy, adherence to specified industry guidelines on sourcing materials, emphasizing strict ethical behaviour, explicit equal employment policy, not employing the under-aged, etc. Based on the results of our homogeneity test ($Q = 215.93$), we used a random effects model to compare these strategies.

We recognized 43 proactive strategies to evaluate firm economic, environmental, and social performance. As these strategies evaluated the same output, the results of our homogeneity test ($Q = 428.74$, $p < 0.0000$) indicated that the data were not homogeneous and that we should apply a random effects model to compare these strategies.

While several studies evaluated the impact of sustainability-oriented strategies on financial performance alone, we determined that it would be beneficial to run the same analysis on financial indicators as validation indicator. The results of our homogeneity test ($Q = 377.35$) indicated that we should apply a random effects model to evaluate the relationship between corporate sustainability-oriented strategies and financial performance only (see Table 11).

Table 11: SPSS Meta-analysis Output Results for Financial Performance Only

Studies included	Number of measures	Meta-analysis model	Meta-analysis outcome	Standard error	Z-score	CI (95%)	Test of homogeneity
All strategies	29	Random effects	0.179	0.028	6.328	0.123 to 0.234	Q = 377.351

3.8 Summary

Study data were based on an exhaustive literature search using ABI/Inform® (ProQuest), Thomson Reuters (formerly ISI) Web of Knowledge, EBSCOhost®, and SciVerse Scopus®. Based on the availability of the required data on the measures of interest, we performed a meta-analysis on 18 scholarly articles from top-tier academic journals containing 64 experimental treatments that measured an observed (not self-reported) behavioural outcome, which yielded a total sample size of 23,871 observations. Drawing definitive conclusions were based on the fact that most studies used combined multiple treatments. The variables of interest included sustainability-oriented strategies adopted by firms and their relevant performance. The meta-analytic findings suggest that there is a positive medium to strong relationship between sustainability-oriented strategies, regardless of whether the firm's behaviour is reactive or proactive (Dyllick et al. 1997; Gminder et al. 2002), and a firm's "triple bottom line."

Chapter 4

4. Findings

4.1 Introduction

This section first presents the results of running the meta-analysis models. It then interprets the results of these models that have tested the significance and strength of the relationship between corporate sustainability strategies and organizational performance using the “triple bottom line” concept (environmental stewardship, social duty, and economic success). It also deduces the significance and strength of each strategic behaviour (reactive versus proactive) on organizational performance to prove that proactive strategic behaviour has more significance and is stronger in relationship to performance.

4.2 Results

The reported meta-analytical outcome is an aggregate finding that combines the effects found in previous studies. All meta-analytical models associated with their respective outcomes are shown in Table 5. The table describes the results in detail. The first meta-analysis “random effects” model shows that firms adopting any corporate sustainability-oriented strategy (i.e., reactive or proactive) are expected to achieve overall performance (i.e., long-term economic performance, positive outcomes for the natural environment, supporting people and social outcomes) that is almost 30 percent higher than firms that did not adopt a sustainability-related strategy. Furthermore, the results of our confidence interval (95 percent) suggested that those firms will increase performance by 25 to 34 percent when compared to firms that do not adopt a sustainability-oriented strategy. These findings support Hypothesis 1, which states that organizations adopting corporate sustainability-oriented strategies have improved their “triple bottom

line,” which is framed to measure their sustainable business performance in economic, environmental, and social terms.

Our research is based on a shift from a general inquiry of whether corporate sustainability strategies affect performance to examining the relationship between corporate sustainability strategies and the three key elements of organizational performance (environmental, social, and economic). These focuses, combined with stakeholder-related concerns, are central tenets of corporate sustainability and integral to the strategic direction of sustainable companies. In theory, companies can simultaneously embrace environmental stewardship, social duty, and economic success.

Because of available market opportunities, we hypothesize that firms adopting proactive sustainability-oriented strategies are more likely to have a higher payoff than firms adopting reactive sustainability-oriented strategies. As mentioned earlier, the “triple bottom line” concept is capable of capturing the firm’s environmental stewardship, social duty, and economic success. However, developing one comprehensive sustainability strategy that can positively impact performance is a challenge for any business. A business’s strategic behaviour, whether it is reactive or proactive, becomes a key determinant of overall organizational performance. As shown above, organizations adopting any type of strategic behaviour were found to be in a better position regarding their overall improved performance. When considering their performance from a reactive behaviour perspective, there was strong evidence that these firms can improve their overall performance by 18.2 percent. Proactive corporate sustainability-oriented strategies demonstrated expected improvement in firm performance by 36 percent, which is almost double the expected improvement in performance from adopting reactive corporate sustainability-oriented strategies. Furthermore, a confidence interval (95 percent) of these findings indicated that the mean level of performance improvement for a firm’s reactive behaviour was between 11 and 25 percent, while the

mean level of performance improvement for a firm’s proactive behaviour was between 30 and 42 percent. These findings support Hypothesis 1, which states that adopting proactive sustainability-oriented strategies is associated with greater improvement in the firm’s “triple bottom line” than adopting reactive sustainability-oriented strategies.

Lipsey (2001) argued that homogeneity analysis tests whether it is reasonable to assume that all effect sizes are estimating the same population mean. If the homogeneity hypothesis test is rejected, then the distribution of effect sizes is heterogeneous. When heterogeneity exists, the analytical approach incorporates a random effects model, which is based on the premise that the estimated effects in different studies are not identical, but they follow some distribution. The centre of this symmetric distribution describes the average of the effects, while the width describes the degree of heterogeneity. To interpret the Q statistics, Q is distributed as a chi-square with degrees of freedom (df) equal to the number of ESs – 1.

The Q statistics for the two groups were compared using a random effects analog and the one-way analysis of variance (the ANOVA test). The first procedure offers equivalent results to estimating a regression model with a single dummy variable; in our case, this is the reactive group versus the proactive group. The procedure used below compares estimates “within” the study variation and “between” the study variation to produce an overall conclusion as to whether the firm’s reactive and proactive behaviours demonstrate equivalent performance improvements. The procedure is as follows:

$$Q_{\text{Reactive}} = 215.93, Q_{\text{Proactive}} = 428.74, Q_{\text{within}} = Q_{\text{Reactive}} + Q_{\text{Proactive}} = 644.67$$

$$df = k - j = \text{number of effect sizes} - \text{number of groups} = 64 - 2 = 62$$

$$Q_{\text{between}} = Q_{\text{total}} - Q_{\text{within}} = 733.67 - 644.67 = 88.65$$

$$df = j - 1 = \text{number of groups} - 1 = 2 - 1 = 1$$

$Q_{\text{critical}} (df=1, \alpha=0.05) = 3.84$ (from chi-square table)

$Q_{\text{between}} > Q_{\text{critical}}$

The results of the ANOVA analog show that the Q “between study” group data ($Q = 88.65, p < 0.004$) account for a significant amount of the variability in our data, which affirms that our groupings are statistically valid. Therefore, differences in the strategic behaviour regimes explain significant variation in a firm’s performance changes.

The second meta-analysis “random effects” model shows that firms adopting any type of corporate sustainability-oriented strategy (i.e., reactive or proactive) are expected to enhance its financial performance by almost 18 percent, which supports most research findings within this domain.

4.3 Summary

First, we presented the aggregate finding that combines the effects from previous studies. The studies were found to possess statistical heterogeneity. The best fit is the meta-analysis “random effects” model, which assumed that the effects being estimated in the different studies are not identical. The results of the three random effects meta-analysis models confirm support for hypotheses 1 and 2. As scholars assumed that current evidence is either too fractured or too variable to produce generalizable conclusions, our study concluded that there is a positive medium to strong relationship between sustainability-oriented strategies regardless of the nature of the firm’s behaviour (Dyllick et al., 1997; Gminder et al., 2002) and its “triple bottom line.”

Furthermore, the results revealed that regardless of firm type (e.g., multinational corporation or local establishment, emerging economy firm or developed nation business), proactive sustainability-oriented strategies are likely to have a higher payoff. Firms that adopt reactive sustainability-oriented strategies are

expected to experience a decline in their overall performance compared to those firms that adopt a proactive stance. This meta-analysis establishes a greater degree of certainty with respect to the corporate sustainability strategies and firm “triple bottom line” relationship than is currently assumed to exist by many business scholars.

Also, the results support the argument that the relationship corporate sustainability strategies and firm financial performance is strong and positive in nature which was tested by many scholars and found to be significant.

Chapter 5

5. Discussions, Limitations, and Conclusions

5.1 Introduction

This section presents discussions on the study's main findings and limitations. It also makes suggestions for other areas of investigation for future researchers, as well as conclusions.

5.2 Discussions

Scholars have presented numerous concerns with unaccountable business practices and how harmful they are to society, family structure and their lifestyles, and even the future of the planet (Mitchell and Sikka, 2005). Researchers also strongly suggest that society and people must precede profit, and managers have moral obligations beyond meeting minimal lawful obligations (Hammonds, 1996; Zadek, 2001). It has become critical to incorporate the notion of sustainable development with business activities.

Consequently, more corporations are endeavouring to bring their business activities under the umbrella of corporate sustainability. Businesses are using different methods to balance financial, ecological, and sociable ingredients in their business models. The interaction between the firm's internal economic considerations and external social and environmental issues is a direct outcome of the sustainability integration process. Integration encourages members of corporations to accept more responsibility for safeguarding and preserving resources (Law and Gunasekaran, 2012). It also encourages business operations to be more socially responsible and to help sustain development.

Willard (2005) emphasized that corporate sustainability involves the firm's economic, environmental, and social responsibilities that contribute to its viability, public welfare, and quality of life. He echoes the idea

that sustainable development from a firm's perspective involves maintaining and enhancing economic, natural, and social performance. Matos and Hall (2007) argued that integrating sustainability into business operations substantially increases the complexity associated with interacting with different stakeholders. Hockerts (2002) introduced the concept of a new firm that is "meeting both business's direct and indirect stakeholders (such as shareholders, consumers, employees, regulatory authorities, community representatives, etc.), without compromising its performance to encounter forthcoming stakeholder needs."

This research helps to address this issue by aggregating the results of previous studies to produce a conclusion about the efficacy of sustainability-oriented strategies. Our findings indicate that there is a positive medium to strong relationship between sustainability-oriented strategies, whether the firm's behaviour is reactive or proactive (Dyllick et al., 1997; Gminder et al., 2002), and its "triple bottom line." Also, there is a positive small to medium relationship between sustainability-oriented strategies, whether the firm's behaviour is reactive or proactive, and its financial performance. Firms adopting corporate sustainability-oriented strategies are expected to increase their overall performance by almost 30 percent as measured in terms of their long-term economic performance, positive outcomes for the natural environment, and supporting people and social outcomes.

These expected findings can be explained in terms of the strategy definition, which is "a set of key decisions that are made to achieve objectives." A business organization's strategy explains how the business will achieve its mission and goals. For example, if the firm adopts strategies that address and connect economic, social, and environmental factors, then the company's overall orientation will focus on developing and managing products and services that are economically, environmentally, and socially accountable. Therefore, sustainability strategies provide managers with choices that will enable them to

align environmental and social opportunities with the company's general strategy. Scholars were able to define strategies that focus on internal and external sustainability issues that serve to improve performance in terms of the issues identified.

Judge and Douglas (1998) conceived the idea that a firm's proactive stance would consider future environmental aspects, and extends beyond compliance with current regulations. These researchers' empirical investigation, which used resource-based theory, also suggests that adopting environmental strategies produces higher corporate financial and environmental performance. So, meeting a firm's direct and indirect stakeholders' needs without compromising its performance becomes a real issue. For example, a firm could be challenged to minimize a certain type of (gas, liquid, and/or solid) waste from current operations, which is referred to as pollution prevention, while simultaneously working toward acquiring and/or developing a more sustainable solution that uses clean technologies and/or future skill sets, which it could integrate into its structure. Extensive communication and dialogue with external stakeholders is a challenge for any firm trying to integrate sustainability into its current operations regarding its current product portfolio (which is referred to as product stewardship) and its economical new product portfolio related to social and environmental problems (which is referred to as the base of the pyramid).

Developing one comprehensive sustainability strategy that can positively impact performance is a challenge for any business. Sustainability-oriented strategies usually build benefits for the firm across different dimensions, such as reduction and control of risks; improvement of the firm's credibility, reputation, and image; efficiency and productivity; market differentiation; and creation of a market for sustainability through product and service innovation. Firms adopt these individual strategies primarily to reap these advantages, which also serve as corporate goals.

Carroll (1979) introduced the concept of a firm's responsiveness. Sharma and Vredenburg (1998) built on this concept and conducted research to link a firm's responsiveness to organizational capabilities. They examined the linkages between budding competitive organizational capabilities that create value due to adoption of responsiveness strategies (Hart, 1995). They classified firms as either reactive or proactive from a strategic behaviour orientation. Based on their definition, a firm is proactive only if it exhibits a consistent pattern of voluntary actions across all dimensions relevant to its range of activities, which are not required to fulfill environmental regulations or respond to isomorphic pressures within the industry as standard business practices. However, a firm is reactive only if it emphasizes the reduction of operational, financial, and legal risks. Risks cannot be insured and can cause financial disruption, negative media exposure, and damaged reputations for companies. Firms undertake voluntary initiatives to preserve and restore the habitat and reduce waste, as opposed to proactive initiatives that involve controlling emissions and waste as per regulations, reducing material usage, innovating and developing less polluting products and services, and forming partnerships with stakeholders for environmental preservation and social prosperity.

A business's strategic behaviour, whether it is reactive or proactive, is a key determinant of overall organizational performance. We originally hypothesized that adopting proactive sustainability-oriented strategies is associated with greater improvement in the firm's "triple bottom line" than adopting reactive sustainability-oriented strategies. In comparing these two corporate sustainability-oriented strategic regimes, this study shows that firms adopting a reactive stance can expect to see an 18 percent improvement in their overall performance. However, when firms adopted proactive corporate sustainability-oriented strategies, they experienced a 36 percent improvement in overall performance, which is almost double the expected improvement in performance from adopting reactive corporate sustainability-oriented strategies. These expected findings can be explained in terms of the work done by

several scholars using resource-based theory to construct a formal model of “profit maximizing” for corporate sustainability. The conclusion stated that if two companies produce identical products, but one firm adds a “social” attribute or feature, then some consumers and/or stakeholders will prefer that firm’s product (McWilliams and Siegel, 2000).

Salzmann et al. (2005) claimed that the relationship between a firm’s business performance and its sustainable development strategy is very complex. Hart (1995) and Florida (1996) argued that organizations’ attitudes and behaviours normally follow an evolutionary path. Firms adopting a reactive stance might begin to adopt proactive corporate sustainability strategies that contribute to their sustainable development goals. Yet, it is becoming more important to align a firm’s self-interest with the greater public good in ways that add value to both the firm and society. Therefore, quantifying the impact of each strategic behaviour (reactive versus proactive) on organizational performance is becoming critical in understanding which approach is more significant. In theory, environmental stewardship, social duty, and economic success can be embraced at the same time. However, any firm’s strategic behaviour orientation typically focuses on expanding revenue-generating activities while reducing overhead costs. Adopting environmental protection and prevention strategies based on different stakeholders’ pressures could become costly and difficult to implement due to internal pressures.

Placet and Anderson (2005) argued that drafting strategies based on corporate environmental stewardship and social responsibility awareness should enhance a firm’s economic output as well as its environmental stewardship and social duty position. The mean level of the firm’s overall performance improvement for reactive sustainability-oriented strategies ranges from 11 to 25 percent because increasing resource productivity via more efficient use of materials and waste reduction will help to lower production costs. Corporate support for environmental compliance will result in improved output. On the other hand, the

mean level of a firm's overall performance improvement for proactive sustainability-oriented strategies ranges from 30 to 41 percent because demonstrating social awareness will help to reduce lost workdays, increase company commitment, and decrease employee turnover, all of which help to improve the bottom line. Strategies for environmental stewardship, sociable responsibility, and financial prosperity are usually best developed simultaneously.

A business's strategic behaviour (reactive versus proactive) is a key determinant of overall organizational performance. A firm's ultimate goal will involve developing different proactive sustainability-oriented strategies that transition from resource-intensive, volume-maximizing operations and compliance with current regulations to less-intensive resource usage, maximum stakeholder value, and exceeding compliance with current regulations. Indeed, compelling evidence suggests that adopting either type of strategic behaviour (reactive or proactive) will improve a firm's performance. Proactive sustainability-oriented strategies have a greater impact on improving a firm's performance. Our findings point to a positive medium to strong relationship between sustainability-oriented strategies and a firm's performance, with a significantly higher impact for a proactive firm's behaviour.

Our findings have important implications for policymakers who promote reactive initiatives, which are defined by Sharma and Vredenburg (1998) as merely voluntary initiatives that preserve and restore the habitat and reduce waste, as opposed to proactive initiatives that control emissions and waste as per regulations, reduce material usage, innovate and develop less polluting products and services, and form partnerships with stakeholders for environmental preservation and social prosperity. Willard (2005) stated that firms travel along a continuum that begins with a "no obligation" stage that ignores environmental and social responsibilities. Firms then move to more reactive compliance activities, and progress to a

proactive integration of sustainability into operations and strategy. Proactive sustainability-oriented strategies evaluated in this study demonstrate real performance improvements.

However, it is important to ask, “What is the impact of these strategies on performance?” Key efforts have been made to understand the impact of corporate sustainability strategies on organizational performance. Our review shows that while a number of studies reported either a negative relationship (Abu Bakar and Ameer, 2011; Cheung et al., 2010; Huang and Kung, 2010; Li and Zhang, 2010) or no significant association (Cheung et al., 2010; Li and Zhang, 2010) between corporate sustainability strategies and an organization’s overall performance, most evidence reported positive and significant relationships (Ben Brik et al., 2011; Boehe and Barin Cruz, 2010; Branzei et al., 2004; Chan, 2005; Clemens, 2006; Dowell et al., 2000; Fryxell and Szeto, 2002; Huang and Kung, 2010; Mishra and Suar, 2010; Muller and Kolk, 2010; Peng and Lin, 2008; Rettab et al., 2009; Wagner, 2010; Zeng et al., 2010; Zhu et al., 2007).

Our conclusions are consistent with most recent studies that analyzed the relationship using different measures. Proactive sustainability strategies require flexible approaches to encourage performance improvement. Being flexible might help firms to create and develop collaborative relationships between the government and the regulated community to support shared learning and capacity development (Sharma and Vredenburg, 1998). In other cases, proactive sustainability strategies affected corporate attitudes with respect to firms’ environmental and management practices. While reactive sustainability strategies might not significantly affect performance improvement, they can help to establish a foundation for long-term environmental stewardship that eventually results in the adoption of proactive sustainability strategies (Sharma and Vredenburg, 1998; Willard, 2005).

5.3 Limitations and Future Research

Our research established several criteria for inclusion and exclusion that enabled us to evaluate which studies were suitable for comparison in this analysis. Although we followed a very detailed approach, our findings require cautious interpretation. We only surveyed companies that professed sustainability, although we could have included firms that did not consider sustainable development. As there was a limited number of existing studies, we could not implement a multiple regression analysis. This study implemented a random effects analog, and the one-way ANOVA, to evaluate the relationship between sustainability strategies and performance to confirm the same result. While our findings include more than 20,000 observations of sustainable strategic behaviour (including differently sized firms from a number of countries), we advise caution in extrapolating our findings to predict the performance outcomes of firms that employ other non-sustainable strategies, especially when they relate only to economic performance.

The sample size limited the scope of analytical statistical methods, which could otherwise have added more insights to the uncovered relationships. In particular, this study used only “r” (the Pearson product moment coefficient), which represents the strength of association between two inherently continuous measures. It could have used the standardized mean difference, which compare a standardized group on a developed continuous measure, and odds-ratio, which compares the odds of success in the treatment group in relation with the odds of success in the control group.

While these issues might have a relatively minor effect on sustainable strategic behavior efficacy, they can still produce changes that can produce future benefits. Therefore, future research can involve a larger population of firms, and can also compare and contrast sustainable and non-sustainable companies.

We briefly addressed organizational culture but future research could expand upon this topic to follow the development of value consensus and evaluate the effect of self-transcendence and openness on changing values with respect to strategic behaviour and firm performance over time.

5.4 Conclusion

The conclusions presented in our research build on the inconsistent findings from previous studies to establish an overall assessment of the effectiveness of corporate sustainability-oriented strategies. This research provides several key contributions to organizational research on sustainability and performance, as well as other areas for future study. It establishes a broader view of the efficacy of sustainability-oriented strategies and how they can function to align sustainable business practices. The research presents critical insights on the relationship between corporate sustainability-oriented strategies and a firm's performance, as measured by reactive and proactive sustainability-oriented strategies.

There is clear evidence that a firm's overall performance will increase when it adopts proactive sustainability-oriented strategies. Proactively sustainable firms are likely to have a higher payoff than those that adopt reactive sustainability-oriented strategies. The statistics establish a greater degree of certainty with respect to the relationship between corporate sustainability strategies and a firm's "triple bottom line" than is currently assumed by many business scholars. Finally, this research demonstrates the need for additional research on organizational culture and how openness to change can increase its value.

References

- Abu Bakar, A. S., & Ameer, R. (2011). Readability of corporate social responsibility communication in malaysia. *Corporate Social Responsibility and Environmental Management*, 18(1), 50-60.
- Badawy, A. M. (2010). Book review. *Journal of Engineering and Technology Management*, 27(3-4), 215-218.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barney, J. (1991). Special theory forum the resource-based model of the firm: Origins, implications, and prospects. *Journal of Management*, 17(1), 97-98.
- Baumgartner, R. J., & Ebner, D. (2010). Corporate sustainability strategies: Sustainability profiles and maturity levels. *Sustainable Development*, 18(2), 76-89.
- Ben Brik, A., Rettab, B., & Mellahi, K. (2011). Market orientation, corporate social responsibility, and business performance. *Journal of Business Ethics*, 99(3), 307-324.
- Bergh, D. D. (2009). In Ketchen D. J. (Ed.), *Research methodology in strategy and management*. Bingley: Emerald Group Publishing Limited.
- Blueprint for survival* (1972). In Goldsmith E. (Ed.), . Boston: Houghton Mifflin.
- Boehe, D., & Barin Cruz, L. (2010). Corporate social responsibility, product differentiation strategy and export performance. *Journal of Business Ethics*, 91, 325-346.
- Branzei, O., Ursacki-Bryant, T. J., Vertinsky, I., & Zhang, W. (2004). The formation of green strategies in Chinese firms: Matching corporate environmental responses and individual principles. 25(11), 1095.
- Brickley, J. A., Coles, J. L., & Jarrell, G. (1997). Leadership structure: Separating the CEO and chairman of the board. *Journal of Corporate Finance*, 3(3), 189-220.

- Brickley, J. A., Smith Jr., C. W., & Zimmerman, J. L. (2002). Business ethics and organizational architecture. *Journal of Banking and Finance*, 26(9), 1821-1835.
- Cantor, S. L. (2008). In st ed. (Ed.), *Green roofs in sustainable landscape design*. New York: W.W. Norton & Co.
- Carroll, A. B. (1979). A three-dimensional conceptual model of corporate performance. *Academy of Management Review*, 4(4), 497-505.
- Carson, R., 1907-1964. (1962). In Clark H. S. (Ed.), *Silent spring*. Boston : Cambridge; Boston: Houghton Mifflin ; Riverside Press; Houghton Mifflin.
- Chan, R. Y. K. (2005). Does the natural-resource-based view of the firm apply in an emerging economy? A survey of foreign invested enterprises in china. *Journal of Management Studies*, 42(3), 625-672.
- Cheung, Y., Tan, W., Ahn, H., & Zhang, Z. (2010). Does corporate social responsibility matter in Asian emerging markets? *Journal of Business Ethics*, 92(3), 401-413.
- Ciliberti, F., Pontrandolfo, P., & Scozzi, B. (2011). In Spence L., Painter-Morland M.(Eds.), *Small business social responsibility in the supply chain: A literature review* Springer Netherlands.
- Clemens, B. (2006). Economic incentives and small firms: Does it pay to be green? *Journal of Business Research*, 59(4), 492-500.
- Cohen, J., 1923-1998. (1988). In nd ed. (Ed.), *Statistical power analysis for the behavioral sciences*. Hillsdale, N.J.: L. Erlbaum Associates.
- Cook, T. D. (1979). In Campbell D. T. (. T. (Ed.), *Quasi-experimentation : Design & analysis issues for field settings*. Chicago: Rand McNally College Pub. Co.
- Crowther, M. A., & Cook, D. J. (2007). Trials and tribulations of systematic reviews and meta-analyses. *ASH Education Program Book*, 2007(1), 493-497.
- Denyer, D., & Neely, A. (2004). Introduction to special issue: Innovation and productivity performance in the UK. *International Journal of Management Reviews*, 5-6(3-4), 131-135.

- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147-160.
- Dowell, G., Hart, S., & Yeung, B. (2000). Do corporate global environmental standards create or destroy market value? *Management Science*, 46(8), 1059.
- Dyllick, T., Belz, F., & Schneidewind, U. (Eds.). (1997). *Ökologie und wettbewerbsfähigkeit* (1st ed.). Zürich: Buchverlag der Neuen Zürcher Zeitung.
- Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130-141.
- Ebner, D., & Baumgartner, R. J. (2006). The relationship between sustainable development and Corporate Social responsibility. *Corporate Responsibility Research Conference*, Dublin.
- Eddy, D. M., 1941-. (1992). In Hasselblad V., Shachter R. D. (Eds.), *Meta-analysis by the confidence profile method: The statistical synthesis of evidence*. Boston: Academic Press.
- Elkington, J. (1998). Partnerships from cannibals with forks: The triple bottom line of 21st-century business. *Environmental Quality Management*, 8(1), 37-51.
- Elkington, J. (2006). Governance for sustainability. *Corporate Governance: An International Review*, 14(6), 522-529.
- Elkington, J., 1949-. (1998). *Cannibals with forks: The triple bottom line of 21st century business*. Gabriola Island, BC ; Stony Creek, CT: New Society Publishers.
- Encyclopedia of business ethics and society* (2008). In Kolb R. W. (Ed.),. Thousand Oaks: Sage Publications.
- Florida, R. (1996). Lean and green: THE MOVE TO ENVIRONMENTALLY CONSCIOUS MANUFACTURING. *California Management Review*, 39(1), 80-105.

- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Boston; Boston; Toronto: Pitman, 1984: Pitman.
- Fryxell, G. E., & Szeto, A. (2002). The influence of motivations for seeking ISO 14001 certification: An empirical study of ISO 14001 certified facilities in Hong Kong. *Journal of Environmental Management*, 65(3), 223-238.
- Gladwin, T. N., Kennelly, J. J., & Krause, T. (1995). Shifting paradigms for sustainable development: Implications for management theory and research. *Academy of Management Review*, 20(4), 874-907.
- Glass, G. V., 1940-. (1981). In McGaw B., Smith M. L. (Eds.), *Meta-analysis in social research*. Beverly Hills, Calif.; Beverly Hills: Sage Publications.
- Gminder, C. U., Bieker, T., Dyllick, T., & Hockerts, K. (2002). Nachhaltigkeitsstrategien umsetzen mit einer sustainability balanced scorecard. In S. Schaltegger, & T. Dyllick (Eds.), *Nachhaltig managen mit der balanced scorecard: Konzept und fallstudien*. (1st ed., pp. 95-147). Wiesbaden: Gabler Verlag.
- Gray, R. (2010). Is accounting for sustainability actually accounting for sustainability...and how would we know? an exploration of narratives of organisations and the planet. *Accounting, Organizations and Society*, 35(1), 47-62.
- Greene, W. H., 1951-. (2000). In th ed. (Ed.), *Econometric analysis*. Upper Saddle River, N.J.: Prentice Hall.
- Hahn, T., Figge, F., Liesen, A., & Barkemeyer, R. (2010). Opportunity cost based analysis of corporate eco-efficiency: A methodology and its application to the CO2-efficiency of German companies. *Journal of Environmental Management*, 91(10), 1997-2007.
- Hammonds, K. H. (1996). Writing a new social contract. *Business Week*, 60.
- The handbook of research synthesis* (1994). In Cooper H. M., Hedges L. V. (Eds.), . New York: Russell Sage Foundation.

- Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review*, 20(4), 986-1014.
- Hart, S. L., & Milstein, M. B. (2003). Creating sustainable value. *Academy of Management Executive*, 17(2), 56-67.
- Hartung, J., Prof. Dr. (2008). In Knapp G., Sinha B. K. (Eds.), *Statistical meta-analysis with applications*. Hoboken, N.J.: Wiley.
- Hedges, L. V. (1985). In Olkin I. (Ed.), *Statistical methods for meta-analysis*. Orlando; Orlando; Toronto: Academic Press.
- Huang, C., & Kung, F. (2010). Drivers of environmental disclosure and stakeholder expectation: Evidence from Taiwan. *Journal of Business Ethics*, 96(3), 435-451.
- Hubbard, G. (2009). Measuring organizational performance: Beyond the triple bottom line. *Business Strategy and the Environment*, 18(3), 177-191.
- Hunter, J. E. (J. E., 1939-2002). (1990). In Schmidt F. L. (Ed.), *Methods of meta-analysis: Correcting error and bias in research findings*. Newbury Park; Newbury Park, Calif.: Sage Publications.
- Hunter, J. E. (J. E., 1939-2002). (2004). In Schmidt F. L., nd ed. (Eds.), *Methods of meta-analysis: Correcting error and bias in research findings*. Thousand Oaks, Calif.: Sage.
- Hutton, G., Haller, L., & Bartram, J. (2007). Global cost-benefit analysis of water supply and sanitation interventions. *Journal of Water and Health*, 5(4), 481.
- Judge, W. Q., & Douglas, T. J. (1998). Performance implications of incorporating natural environmental issues into the strategic planning process: An empirical assessment. *Journal of Management Studies*, 35(2), 241-262.
- Law, K. M. Y., & Gunasekaran, A. (2012). Sustainability development in high-tech manufacturing firms in Hong Kong: Motivators and readiness. *International Journal of Production Economics*, 137(1), 116-125.

- Li, W., & Zhang, R. (2010). Corporate social responsibility, ownership structure, and political interference: Evidence from china. *Journal of Business Ethics*, 96(4), 631-645.
- The limits to growth; A report for the club of rome's project on the predicament of mankind* (1972). In Meadows D. H., Meadows D. L., Club of Rome., Potomac Associates. and Project on the Predicament of Mankind (Eds.), . New York, Universe Books (1972); New York: Universe Books; New American Library.
- Lipsey, M. W. (2001). In Wilson D. B. (Ed.), *Practical meta-analysis*. Thousand Oaks, Calif.: Sage Publications.
- Lo, S., & Sheu, H. (2007). Is corporate sustainability a value-increasing strategy for business? *Corporate Governance: An International Review*, 15(2), 345-358.
- Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. *Administrative Science Quarterly*, 48(2), 268-305.
- Marylynn Placet, Roger Anderson, & Kimberly M Fowler. (2005). STRATEGIES FOR SUSTAINABILITY. *Research Technology Management*, 48(5), 32-41.
- Matos, S., & Hall, J. (2007). Integrating sustainable development in the supply chain: The case of life cycle assessment in oil and gas and agricultural biotechnology. *Journal of Operations Management*, 25(6), 1083-1102.
- McMullen, C. A. (2001). Firms push sustainability. *Waste News*, 7(4), 4.
- McWilliams, A., & Siegel, D. (2000). Corporate social responsibility and financial performance: Correlation or misspecification? *Strategic Management Journal*, 21(5), 603-609.
- McWilliams, A., & Siegel, D. (2011). Creating and capturing value: Strategic corporate social responsibility, resource-based theory, and sustainable competitive advantage. *Journal of Management*, 37(5), 1480-1495.
- Mishra, S., & Suar, D. (2010). Does corporate social responsibility influence firm performance of Indian companies? *Journal of Business Ethics*, 95(4), 571-601.

- Mitchell, A., & Sikka, P. (2005). *Taming the corporations: Shedding light on darker practices working for an open and democratic society.* (). Association for Accountancy & Business Affairs: Basildon.
- Muller, A., & Kolk, A. (2010). Extrinsic and intrinsic drivers of corporate social performance: Evidence from foreign and domestic firms in Mexico. *Journal of Management Studies*, 47(1), 1-26.
- Norman, W., & MacDonald, C. (2004). Getting to the bottom of "triple bottom line". *Business Ethics Quarterly*, 14(2), 243-262.
- Orlitzky, M., Schmidt, F., & Rynes, S. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies*, 24(3), 403-441.
- Orsato, R. J. (2009). *Sustainability strategies: When does it pay to be green?*. Basingstoke ; New York: Palgrave Macmillan.
- Pedhazur, E. J. (1991). In Schmelkin L. P. (Ed.), *Measurement, design, and analysis: An integrated approach*. Hillsdale, N.J.: Lawrence Erlbaum Associates; L. Erlbaum Associates.
- Peng, Y., & Lin, S. (2008). Local responsiveness pressure, subsidiary resources, green management adoption and Subsidiary's performance: Evidence from Taiwanese manufactures. *Journal of Business Ethics*, 79(1-2), 199-212.
- Perrini, F., & Tencati, A. (2006). Sustainability and stakeholder management: The need for new corporate performance evaluation and reporting systems. *Business Strategy and the Environment*, 15(5), 296-308.
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14(3), 179-191.
- Placet, M., Anderson, R., & Fowler, K. M. (2005). Strategies for sustainability. *Research Technology Management*, 48(5), 32-41.

- Research in corporate sustainability : The evolving theory and practice of organizations in the natural environment* (2002). In Sharma S., Starik M. (Eds.), . Cheltenham, UK ; Northampton, MA: Edward Elgar.
- Rettab, B., Brik, A., & Mellahi, K. (2009). A study of management perceptions of the impact of corporate social responsibility on organisational performance in emerging economies: The case of Dubai. *Journal of Business Ethics*, 89(3), 371.
- Robèrt, K., Schmidt-Bleek, B., Aloisi de Larderel, J., Basile, G., Jansen, J. L., Kuehr, R., . . . Wackernagel, M. (2002). Strategic sustainable development — selection, design and synergies of applied tools. *Journal of Cleaner Production*, 10(3), 197-214.
- Roberts, R. W. (1992). Determinants of corporate social responsibility disclosure: An application of stakeholder theory. *Accounting, Organizations and Society*, 17(6), 595-612.
- Robins, F. (2006). The challenge of TBL: a responsibility to whom?. *Business Society Review*, 111, 1–14.
- Salzmann, O., Ionescu-somers, A., & Steger, U. (2005). The business case for corporate sustainability. *European Management Journal*, 23(1), 27-36.
- Sarkis, J. (2001). Manufacturing's role in corporate environmental sustainability - concerns for the new millennium. *International Journal of Operations & Production Management*, 21(5/6), 666-686.
- Schendel, D. (1994). *Introduction to 'competitive organizational behavior: Toward an organizationally-based theory of competitive advantage'* John Wiley & Sons, Inc.
- Sharma, S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities. *Strategic Management Journal*, 19(8), 729-753.
- Shrivastava, P. (1995). Environmental technologies and competitive advantage. *Strategic Management Journal*, 16(S1), 183-200.
- Shrivastava, P. (1995). The role of corporations in achieving ecological sustainability. *Academy of Management Review*, 20(4), 936-960.

- Shrivastava, P. (2006). Sustainable transportation strategies: China. *Greener Management International*, (50), 53-63.
- Shrivastava, P., & Hart, S. (1995). Creating sustainable corporations. *Business Strategy and the Environment*, 4(3), 154-165.
- Stead, J. G. (2009). In Stead W. E., Stead W. E. and rd ed. (Eds.), *Management for a small planet*. Armonk, N.Y.: M.E. Sharpe.
- Steurer, R., Langer, M. E., Konrad, A., & Martinuzzi, A. (2005). Corporations, stakeholders and sustainable development I: A theoretical exploration of Business–Society relations. *Journal of Business Ethics*, 61(3), 263-281.
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571-610.
- Teddle, C. (2009). In Tashakkori A. (Ed.), *Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences*. Los Angeles: SAGE.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14(3), 207-222.
- United Nations World Commission on Environment, and Development. (1987). In Lebel G. G., Kane H. (Eds.), *Sustainable development - A guide to our common future - the report of the world commission on environment and development*. 1987:
- Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, 44(2-3), 95-105.
- Votaw, D. In Sethi S. P. (Ed.), *The corporate dilemma; traditional values versus contemporary problems [by] dow votaw and S. prakash sethi. with contributions by robert chatov and phillip blumberg*. Englewood Cliffs, N.J., Prentice Hall c1973:

- Wagner, M. (2010). The role of corporate sustainability performance for economic performance: A firm-level analysis of moderation effects. *Ecological Economics*, 69(7), 1553-1560.
- Welford, R., 1960-. (1995). *Environmental strategy and sustainable development: The corporate challenge for the twenty-first century*. London; New York: Routledge.
- Willard, B. (2005). *The next sustainability wave building boardroom buy-in*. Gabriola Island, B.C.; Gabriola Island, BC: New Society Publishers.
- Winkelmann, R. (2008). In th ed. (Ed.), *Econometric analysis of count data*. Berlin: Springer.
- Zadek, S. (2001). *The civil corporation: The new economy of corporate citizenship*. Sterling, VA: Earthscan Publications Ltd.
- Zeng, S. X., Meng, X. H., Yin, H. T., Tam, C. M., & Sun, L. (2010). Impact of cleaner production on business performance. *Journal of Cleaner Production*, 18(10-11), 975-983.
- Zhu, Q., Sarkis, J., & Lai, K. (2007). Green supply chain management: Pressures, practices and performance within the Chinese automobile industry. *Journal of Cleaner Production*, 15(11-12), 1041-1052.

Appendices

Appendix 1- Output with All Sustainability-oriented Strategies

APPENDIX (Raw SPSS output)

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description -----

N	Min ES	Max ES	Wghtd SD
64.000	-.120	.870	.176

----- Fixed & Random Effects Model -----

	Mean ES	-95%CI	+95%CI	SE	Z	P
Fixed	.1639	.1512	.1766	.0065	25.2151	.0000
Random	.2971	.2503	.3440	.0239	12.4337	.0000

----- Random Effects Variance Component -----

v = .029770

----- Homogeneity Analysis -----

Q	df	p
733.3162	63.0000	.0000

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Appendix 2 - Output with Only Reactive Sustainability-oriented Strategies

Run MATRIX procedure: REACTIVE ONLY

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description -----

N	Min ES	Max ES	Wghtd SD
22.000	-.120	.500	.153

----- Fixed & Random Effects Model -----

	Mean ES	-95%CI	+95%CI	SE	Z	P
Fixed	.0869	.0664	.1074	.0104	8.3195	.0000
Random	.1824	.1123	.2525	.0358	5.1009	.0000

----- Random Effects Variance Component -----

v = .023008

----- Homogeneity Analysis -----

Q	df	p
215.9270	21.0000	.0000

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Appendix 3 - Output with Only Proactive Sustainability-oriented Strategies

Run MATRIX procedure: PROACTIVE ONLY

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description -----

N	Min ES	Max ES	Wghtd SD
42.000	-.120	.870	.172

----- Fixed & Random Effects Model -----

	Mean ES	-95%CI	+95%CI	SE	Z	P
Fixed	.2125	.1963	.2288	.0083	25.5977	.0000
Random	.3586	.3002	.4170	.0298	12.0371	.0000

----- Random Effects Variance Component -----

v = .029688

----- Homogeneity Analysis -----

Q	df	p
428.7359	41.0000	.0000

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----

Appendix 4 - Output using the one-way analysis of variance (the ANOVA test)

Variables Entered/Removed^{b,c}

Model	Variables Entered	Variables Removed	Method
1	GROUP ^a	.	Enter

- a. All requested variables entered.
- b. Dependent Variable: Effect size
- c. Weighted Least Squares Regression - Weighted by Inverse variance weight

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.348 ^a	.121	.107	3.22456

- a. Predictors: (Constant), GROUP

Appendix 5 - Output using the one-way analysis of variance (ANOVA) model

ANOVA^{b,c}

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	88.653	1	88.653	8.526	.005 ^a
	Residual	644.663	62	10.398		
	Total	733.316	63			

a. Predictors: (Constant), GROUP

b. Dependent Variable: Effect size

c. Weighted Least Squares Regression - Weighted by Inverse variance weight

Coefficients^{a,b}

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.087	.034		2.580	.012
	GROUP	.126	.043	.348	2.920	.005

a. Dependent Variable: Effect size

b. Weighted Least Squares Regression - Weighted by Inverse variance weight

Appendix 6 - Output for Financial Performance Only

APPENDIX (Raw SPSS output)

Run MATRIX procedure:

Version 2005.05.23

***** Meta-Analytic Results *****

----- Distribution Description -----

N	Min ES	Max ES	Wghtd SD
29.000	-.120	.870	.140

----- Fixed & Random Effects Model -----

	Mean ES	-95%CI	+95%CI	SE	Z	P
Fixed	.1112	.0971	.1253	.0072	15.4215	.0000
Random	.1788	.1234	.2342	.0283	6.3278	.0000

----- Random Effects Variance Component -----

v = .019562

----- Homogeneity Analysis -----

Q	df	p
377.3512	28.0000	.0000

Random effects v estimated via noniterative method of moments.

----- END MATRIX -----