Sustainable Innovation: Drivers, Conditions, and Impact on Triple Bottom Line Performance

BY

KELLY L WEIDNER
B.S., California State University Chico, 1999
MBA, DePaul University, 2004

THESIS

Submitted as partial fulfillment of the requirements
for the degree of Doctor of Philosophy in Business Administration
in the Graduate College of the
University of Illinois at Chicago, 2012

Chicago, Illinois

Defense Committee:

Cheryl Nakata, Chair and Advisor
Anna Cui
Benet DeBerry-Spence
Zafar Iqbal, DePaul University
Jelena Spanjol

This dissertation is for Aaron, Alexis and Mira.

ACKNOWLEDGEMENTS

This dissertation has been years in the making, and I want to acknowledge a number of people who have offered encouragement, feedback, and assistance throughout the process.

First I'd like to acknowledge my chair, Dr. Cheryl Nakata. My time as one of Cheryl's students has been educational, challenging, and always very rewarding. Over the past four years of our time working together, Cheryl has taught me much more than I could have anticipated. She spent countless hours reading and providing feedback on various versions of this dissertation and for that alone, I am grateful. I realize that I am incredibly fortunate to be one of the few lucky students she has mentored and I am indebted to her for her time, wisdom, and encouragement.

I have also been fortunate to have a terrific committee to oversee this dissertation: Anna Cui, Benet DeBerry-Spence, Zafar Iqbal, and Jelena Spanjol. First, I'd like to thank Anna for generously offering her time to walk me through various stages of the analysis. She was always willing to share her expertise with me, and for that I'm very appreciative. To Benet, I'd like to offer thanks for her guidance not only related to the dissertation, but also as it relates to academic life. Zafar similarly offered advice related to this research as well as teaching endeavors and academia as a whole. Finally, I would like to wholeheartedly thank Jelena for her sharp insights and constructive feedback throughout the entire process. I always knew that I could count on Jelena to keep me on my toes and I'm incredibly thankful for her presence on my committee.

I'd also like to thank a number of my fellow students who've supported me in one way or another throughout this process. First, I'd like to thank Haisu Zhang who coached me through data analysis. He was available day and night to get me through one of the toughest parts of this dissertation. Similarly, a member of my cohort, Frederik Beuk, also readily made himself

available to help with the data analysis portion of this dissertation. Frederik, since we started the PhD program together, has always been generous with his time and help, and even more so during this dissertation. He was always fast to respond to my emails and I knew I could count on not only his help but also a funny story or two to brighten up the tedium of data analysis. Other members of the PhD program that I would like to thank for their support are John Hildebrand and Dawn Schneider.

I'd also like to thank José Antonio Rosa for his early inspiration of this research. In my first semester at UIC, José took me on a research trip to the Dominican Republic that subsequently inspired five years of work, including this thesis. Working as Jose's research assistant helped me to discover a field of research that I'm passionate about.

Finally, my friends and family have been invaluable in helping me reach the finish line. I would like to thank Alyson Lippman, Paul and Jacqueline Didier, Stephanie Curry, Kerri Sweeney, and Ken Silber. I would also like to thank my parents Wally and Deanne Baldwin, my most vocal cheerleaders and strongest supporters. Finally, to my husband Aaron I am especially thankful because I would have never gone down this path without his patience, encouragement, and support.

KLW

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

ASV	Average Shared Squared Variance
AVE	Average Variance Extracted
BOP	Base/Bottom of the Pyramid
CFA	Confirmatory Factor Analysis
CFI	Comparative Fit Index
CR	Composite Reliability
CSC	Customer Sustainability Concern
CSR	Corporate Social Responsibility
EFA	Exploratory Factor Analysis
GRI	Global Reporting Initiative
MSV	Maximum Shared Squared Variance
NFI	Normed Fit Index
PLS	Partial Least Squares
RBV	Resource Based View
RMSEA	Root Mean Square Error of Approximation
SMO	Sustainable Market Orientation
TBL	Triple Bottom Line
UNGC	United Nations Global Compact

SUMMARY

This dissertation investigates the role of sustainable innovation as well its drivers, conditions and impact on triple bottom line performance of firms. This research examines this phenomenon through the lens of the dynamic capabilities theory, and is secondarily informed by the organizational learning and market orientation viewpoints. This dissertation addressed the primary research question: *how do firms effectively pursue sustainable innovation and how does such innovation impact triple bottom line performance?* The aim was to uncover strategic, climate, leadership and market drivers of sustainable innovation, investigate the role of organizational processes such as learning and unlearning—and their impact on sustainable innovation, as well as determine the impact of sustainable innovation on triple bottom line performance and whether any boundary conditions moderate this relationship.

The methodology by which the theoretical framework was tested was through an empirical survey distributed among members of various LinkedIn membership groups. The participants in the study were all situated in roles focused on sustainable innovation within their organization. The analysis was conducted using Partial Least Squares (PLS) path modeling via SmartPLS.

The findings indicate that sustainable innovation requires an organization-wide configuration focused on behaviors and activities such as learning and unlearning. Additionally, it demonstrates that those activities are driven by an organization's climate and the activities of its leadership. Specifically, the findings suggest that fostering an environment that is high in trust and focused on sensing the needs of its customers and stakeholders is critical to organizational learning and unlearning, which in turn leads to effective sustainable innovation. Additionally, assigning an internal sustainability champion and encouraging market-oriented behaviors also

have a significant impact on the innovation process. Finally, a significant relationship between sustainable innovation and triple bottom line performance indicates that these initiatives do pay off for the firm.

This research offers implications for theory and practice. With regard to theory, it offers a capabilities-based approach to understanding innovation in a new and encompassing context. For practice, it offers many guidelines for firms looking to meet the needs of their stakeholders (e.g., the local community, shareholders, and employees) by becoming more sustainable.

CHAPTER I: INTRODUCTION AND LITERATURE REVIEW

Since its emergence over 20 years ago, sustainability has become widely regarded as a critical business component by multiple stakeholders of the firm, including shareholders, customers, policymakers, and communities (Sheth et al., 2011; Epstein and Roy, 2003; Hart, 2007; Nidumolu et al., 2009; Pfeffer, 2010; WBCSD, 2008; WEF, 2009; Werbach, 2009; Worldwatch Institue, 2010). This emergence of sustainability as a common objective of firms suggests marketing—and business as a whole—has a role in the wider societal good (Crittendon, 2010).

According to Huang and Rust (2011), as consumers become more aware of environmental, social, and global problems caused by consumption, they increasingly consider the environmental and social performance of goods and services they purchase. A thorough understanding of this consumer, as well as internal and external stakeholder, interest should influence the strategic marketing planning of organizations seeking to make better decisions about environmental and social impact—decisions often categorized under the broad umbrella of sustainability (Crittendon et al., 2010). In a recent survey among over 4,700 managers, Boston Consulting Group and *MIT Sloan Management Review* discovered that over 68% of organizations increased their commitment to sustainability in the last year, and 74% expect this commitment to increase next year (Haanaes, et al., 2012).

According to Senge (2007) corporations are increasingly exploring the value their customers place on topics such as social and environmental impact. While in the past corporations often insulated consumers from topics such as food and water, energy and climate change, today they are engaging in more open dialogue with them, often

educating consumers on how they can impact change with their purchasing choices (Senge, 2007). Additionally, the creation of groups such as United Nations Global Compact (UNGC) and the Global Reporting Initiative (GRI) have increased awareness of such topics and fostered discourse among businesses, communities, and governments on these issues (Fort, 2007).

According to Senge (2007), this growing awareness—combined with added pressure on firms to take action around these issues–requires companies to be prepared to undertake radical change in how they operate. Actions include creating and implementing new products, processes, and business models, or what it otherwise generally known as *innovation*. To be appropriately responsive to the needs and concerns raised, however, this type of innovation, must be tailored to addressing the complex of issues related to social equity and environmental impact. Therefore, given these recent trends and practitioners' growing emphasis on becoming more sustainable, the topic of sustainable innovation has emerged as an important research subject for academicians (Parboteeah, et al., 2012; Hult, 2011).

Based on the sustainability and innovation literature (discussed in greater detail in the latter half of this chapter), this dissertation defines **sustainable innovation** as the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity—what is otherwise referred to as the 'triple bottom line'. These initiatives can include the creation of new, or improvement of existing, products or services, internal processes, or strategy. Because such changes (Senge, 2007) often involve multiple functions and areas of the organization as well as addressing a broad set of stakeholders beyond shareholders or customers (Sheth et al.,

2011), sustainable innovation is more encompassing than new product development, which focuses primarily on meeting the needs of customers. Elevating efforts beyond a firm's traditional focus on customers to a broader set of stakeholders is a comprehensive, strategic exercise (Hult, 2011) and requires a complex set of capabilities to do well (Crittendon et al., 2010).

Dangelico and Pujari (2010), in their examination of green innovation, contend that organizations must have an enhanced level of environmental commitment and have put long-term policies in place to overcome the challenges and risks of these markets. Similarly, Jones et al. (2007) assert that for the field of marketing to move towards a more viable future, it must confront and incorporate sustainable innovation. Specifically, the authors direct firms to engage in innovation efforts that "the span entire product life cycle and involve a comprehensive reassessment of product design and development, of pricing policies, of distribution and marketing communications and of product and packaging disposal" (Dangelico and Pujari 2010, page 128). In short, sustainable innovation encompasses more than new product development, to include other new or enhanced strategic and operational activities.

Take, for example, Herman Miller, the furniture maker founded in 1905. The company has long been Fortune Magazine's top furniture company and one of the "Most Admired Companies," largely due to its commitment to employees, social values, green efforts, and notable product successes such as the Eames chair (Lee and Bony, 2009). In keeping with that spirit, in the 1990s senior executives faced an important decision: should Herman Miller remove PVC—a plastic with potential health hazards—from one of its best selling products? Driven primarily by their concern for the environment, executives realized that to be truly sustainable, they must remove this harmful component

from its products because although PVC is durable, easily formed, and inexpensive, it releases harmful toxins during the manufacture and disposal processes. In broaching that decision, Herman Miller had to reexamine its production processes, supply chain decisions, as well as disposal options.

The outcome of Herman Miller's decision, which was to eventually remove the PVC from this single and many subsequent products, impacted the firm's entire value chain—from procurement to manufacturing and through distribution to customer handling. In implementing the decision, employees from several previously disconnected teams had to learn from one another. For example, purchasing agents now needed to understand how to assess products on multiple dimensions other than simply price (such as environmental performance and ease of disposal). Concurrently, employees were asked to discard and unlearn old industrial processes that resulted in toxic pollution and waste (Lee and Bony, 2009).

As businesses are generally just beginning to incorporate and address multiple stakeholder sustainability concerns and doing so through a broad array of innovation efforts, it may be timely to understand what enables firms to do this process well, and whether and how that impacts the correspondingly broader performance outcomes known as the triple bottom line (social, environmental, and financial performance) (Elkington, 1997). As delineated later in this chapter, research on sustainable innovation is relatively nascent and confined largely to conceptual articulations of its growing importance to business academicians and practitioners.

In light of the above, this research aims to determine empirically what strengthens sustainable innovation and if, what ways, and under which conditions sustainable innovation impacts triple bottom line organizational performance. As suggested by the marketing and

innovation literature as well as the theory of dynamic capabilities, several internal factors may enable or assist sustainable innovation, including a market orientation that is sensitive to stakeholders beyond customers and competitors (Crittendon et al., 2010); sustainable innovation may be preceded by complex learning and unlearning processes in order to problem-solve in ways not previously done; and external conditions such as environmental turbulence may help or hinder sustainable innovation's contribution to the triple bottom line. As elaborated later, dynamic capabilities is a useful theory to gird an initial empirical study as this on sustainable innovation, given that sustainable innovation is a less certain enterprise requiring some reconfiguration of a firm's capabilities in changing environments.

More formally, this dissertation addresses the overarching question: *how do firms effectively pursue sustainable innovation and how does such innovation impact triple bottom line performance?* Specifically, the aim is to determine potential strategic, climate, leadership, and market antecedents of sustainable innovation, the mediated role of learning processes, the impact of such innovation on performance, as well as a boundary condition surrounding that effect. The framework for the study is guided in part by dynamic capabilities theory. This dissertation addresses the following sub-questions:

- *What contributes to effective sustainable innovation?* I examine sustainable market orientation, intra-organizational trust, sustainability champion influence, and customer sustainability concern as possible drivers and interacting factors.
- *What organizational processes impact sustainable innovation?* Here I investigate the role of organizational learning and unlearning processes.

- *Does sustainable innovation lead or not to higher firm performance?* I study whether or not sustainable innovation leads to greater triple bottom line performance in whole or in part (financial, social, and environmental performance).
- *What are the boundary conditions around sustainable innovation?* I investigate environmental turbulence as a contingency of the sustainable innovation-performance link.

The contribution of this study is three-fold. The first is to extend current knowledge of innovation into the emergent area of sustainability. As explained later, while the extant literature on new product development is large, there is limited insight on sustainable innovation per se. This study appears to be one of the first empirical examinations of sustainable innovation, its antecedents, consequences, and contingencies. Next, although researchers have employed competence-based perspectives in addressing green innovation (Menguc and Ozanne, 2005; Chen, 2008), academicians have called for a capabilities-based approach to better understand sustainability (Crittendon et al., 2011). Therefore, the second contribution of this study is to explore this phenomenon utilizing the perspective of the dynamic capabilities theory. This theory is an extension of the Resources Based View and is appropriate for this context since the processes involved in sustainable innovation are less certain and require new insights over traditional innovation. Finally, the third is to provide managers with a roadmap for sustainable innovation, so they can innovate effectively to achieve social, environmental and economic goals.

Literature Review

Although sustainability demands a commitment by firms to rethink the entire value chain as part of the innovation process, the extant literature suggests that most companies are still pursuing sustainable innovation without a long-term strategy by haphazardly launching a hodgepodge of initiatives (Sheth et al., 2011). The following literature review indicates there is still a need for a better theoretical understanding of sustainability practices within organizations (Carraher et al., 2008; Connelly et al., 2011).

To build a framework that will address the research questions, three streams of literature are reviewed as the most pertinent. First is the sustainable development literature, which specifically addresses the context in which this study takes place. Second, is the corporate social responsibility (CSR) literature, which has long addressed related issues such as philanthropy and cause-related marketing. Finally, recently emergent green and sustainable innovation literature, which is limited yet informative. The succeeding discussion of each stream will identify gaps in the literature, as well as highlight the opportunity to advance knowledge on these topics.

Sustainable Development

The most widely accepted definition of sustainable development is that by the United Nations World Commission on Environment and Development (1987): "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." The definition connotes three principles: environmental integrity, social equity, and economic prosperity (Bansal, 2005, Elkington, 1997; WCED, 1987). The application of these three principles is commonly understood as motivations to achieve "triple bottom line" (Elkington, 1997). The term sustainable development contains within it two key concepts.

First is the concept of "needs", in particular, the essential needs of the world's poor, to which society should give overriding priority. Second is the idea that there are limitations imposed by the social and political environment on the ability to meet present and future needs (WCED, 1987, p. 43; Byrch et al, 2007), and that development should allocate heightened concern to social equity. The inclusion of these two concepts suggests that sustainable development is a complex term encompassing dimensions related to the environment as well as social equity.

The literature indicates that the topic of sustainable development has emerged as "one of those ideas that everyone supports but nobody knows what it means" (Porritt, 1998; Byrch et al., 2007). While there is much discussion surrounding the issues related to sustainable development, academicians note confusion as to what the term means (Dangelico and Pujari, 2010; Byrch et al., 2007; Berchicci and Bodewes, 2005; Baumann et al., 2002; Ottman, 1997; Roy et al., 1996; Peattie, 1995; Colby, 1991). Even after over forty years, the sustainability literature remains so fragmented that the term lacks consistency. Similarly, in the marketing and management literatures, terms such as corporate social responsibility, environmental responsibility, social responsibility, sustainable development, sustainability, corporate citizenship, green marketing, and triple bottom line have all been employed to describe this phenomenon (Crittendon et al., 2010).

In their 2007 study, Byrch et al. discovered that although the terms are often used interchangeably, sustainable development and sustainability hold different meanings in the minds of managers. Managers often emphasized notions of economic growth as the key to sustainable development. Yet, when asked about sustainability, managers often emphasized the environment and the Earth's limited resources. Their research findings suggested that the terms

sustainable development and sustainability hold different meanings (Byrch et al., 2007; Barry, 2002; Dryzek, 1997; Milne, 1996; Wachernagel and Rees, 1996) with the latter term generally accepted as a subset of the former. The following discussion highlights the literature related to the term sustainability, the term more commonly used in the marketing literature.

Sustainability

Although introduced in 1955 by Peter Drucker, and despite widespread intent to better understand the importance of sustainable business practices, the topic of sustainability is still not widely studied in premier marketing journals (Chabowski et al., 2011). Additionally, the marketing literature supports Byrch et al.'s (2007) finding that sustainability is a complex term, having been defined in many different ways (Sheth et al., 2011; Crittendon et al., 2010; Hoffman and Bazerman, 2007). As a business goal, sustainability is often loosely translated into a triple bottom line responsibility encompassing economic, environmental, and social responsibilities (Huang and Rust, 2011; Boyd, 2001; Johnson, 2009). Yet others have identified sustainability as "an approach firms are increasingly adopting to conduct business, thereby altering established norms and rules for firms worldwide" (Chabowski et al., 2011; Engardio et al., 2007).

In their review and analysis of the sustainability literature, Chabowski et al. (2011) identified research trends beginning in the 1950s. The authors discovered that early sustainability research conducted from the 1950s to the 1980s focused primarily on ethics, particularly in relation to: 1) the practical of managerial marketing ethics, and 2) marketing ethics frameworks. Secondary topics included environmentalism and conservation as well as the importance of corporate culture and ritual. Interestingly, the researchers found little continuity between these early works and later research conducted in the 1990s and 2000s.

Research in the 1990s, and again in the 2000s, primarily focused on citizenship. This time period also saw the growing emergence of topics such as CSR, resource dependence, as well as competitiveness and profitability (Chabowski et al., 2011). Finally, a research stream during this time period examined corporate stakeholder theory suggesting an organization's external network plays a role in sustainability-related pursuits. Based on their findings, the authors called for applying a capabilities-based approach to better understand the external and internal resources that create a marketplace advantage for the firm that is pursuing sustainability initiatives.

More recently, the literature has established sustainability as a critical business goal for stakeholders including investors, customers, and policymakers (Sheth, et al., 2011, p. 21; Epstein and Roy, 2003; Hart, 2007; Nidumolu et al., 2009; Pfeffer, 2010; WBCSD, 2008; WEF, 2009; Werbach, 2009; Worldwatch Institute, 2010). Incorporating societal and environmental impact into the bottom line is becoming critically important to firms as customers and other stakeholder groups place added emphasis on the importance of organizations "doing good". Hult (2011) stresses the consideration of the stakeholder interests in regard to sustainable actions, even though it may not always be explicit, and positions sustainability as an "intangible resource" with three dimensions: market orientation, triple bottom line, and stakeholders (Hult, 2011, p.3; Hult and Ketchen, 2001; Hult et al., 2002). Others view sustainability as the triple bottom line of economic prosperity, environmental integrity or respect for the environment, and social responsibility (Boyd, 2001; Johnson, 2009). Finally, Sheth et al. (2011) suggest that sustainability is a business goal that translates into triple bottom line responsibility. These various interpretations of sustainability indicate that much ambiguity surrounds the definition of

this term. However, it is worth noting that having a triple bottom line does not actually mean that a firm has achieved sustainable development.

It is clear from this literature review that initiatives related to sustainable development are typically driven by the desire to meet the needs of an expanded set of stakeholders (Sheth et al., 2011). However, very little is said about other motivations or antecedents of such behavior on the part of the organization (Dangelico and Pujari, 2010). Therefore, gathering a better understanding of the drivers of sustainable innovation is a significant motivation of this research.

This review of the literature related to sustainable development and its subset of sustainability highlights an opportunity to: 1) address a call for the application of a capabilities based approach to understanding sustainability and its impact on performance (Connelley et al., 2011), 2) understand *how* firms address the changing marketplace by responding to the needs of an expanded set of stakeholders, a dominant theme in the sustainability literature (Crittendon et al., 2010), and finally 3) understand *why* firms address the needs of this marketplace.

Corporate Social Responsibility (CSR)

The second stream of literature informing the theoretical framework is the literature related to CSR. Similar to sustainability, corporate social responsibility has been cited as difficult to define (Peloza and Shang, 2010). However, Wood (1991) offers a widely cited definition: "…a business organization's configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm's social relationships" (page 693). It is important to note that this review is not an exhaustive review of the CSR literature, but is instead focused on pieces related to sustainability.

Peloza and Shang, in their 2010 meta-analysis, find that although there are a wide variety of activities related to CSR, many are focused on philanthropy and customers. Of the studies they reviewed, 65% were focused on philanthropy. Under the umbrella of philanthropy, 29% of the studies were focused on business practices such as cause related marketing, where a charity donation is tied to a commercial exchange. Other philanthropic activities include case donations (not tied to a commercial exchange), statements of support for a charity, community involvement, and employee volunteerism. The next most common category of CSR activities relates to the business practices of the firm (51% of the studies). Examples of these types of activities included environmental protection practices, recycling, and such. Finally, product-related features were present in only 19% of the studies cited in the analysis.

Interestingly, the authors indicate that not all CSR activities are viewed positively by all stakeholders (Peloza and Shang, 2010). This, the authors argue, may play a role in the varying and inconsistent relationship depicted between CSR and financial performance. Finally, the authors highlight an overwhelming focus on the customer as the primary stakeholder, contrary to actions focused on sustainability, which expand the stakeholder focus. In fact, only 15 of the 177 studies examined highlighted a stakeholder other than the customer, a notable variation from the literature related to sustainability.

The literature also suggests that while CSR is often viewed as a means of generating exchange (e.g., cause-related marketing) and encompasses a wide variety of activities, these studies typically ignore innovation activities (Berens et al., 2005; Brown and Dacin, 1997; Luo and Bhattacharya, 2006). Furthermore, given our diffused understanding of CSR, ties to firm performance are unclear and inconsistent (Peloza and

Papania, 2008). The literature suggests that different types of CSR have different effects on firm value and that some activities are viewed positively while others are viewed negatively (Aguilera et al., 2007; Opperwal et al., 2006). For example, ethical initiatives related to being more socially responsible or improving employee relations impact attitudes toward the activity and the firm, however; philanthropy does not (Wang, 2008; Peloza and Shang, 2010).

In sum, this review of the CSR literature, specifically those initiatives tied to sustainability, suggests that the innovation aspect of CSR is not well examined and understood. Therefore, an opportunity exists for us to better understand how socially and environmentally conscious activities, specifically those related to innovation, impact firm performance. More specifically, an empirically-tested link between sustainability and triple bottom line performance—a critical incentive for firms looking to balance a desire to "do good" *and* meet the bottom line required by shareholders—is still missing. While the innovation-performance link has been well tested in the literature (discussed in the following section), this literature review indicates a clear opportunity for use to better understand the link between sustainable innovation and the triple bottom line. While there may be an inclination on the part of firms to believe the link between innovation and performance weakens when environmental and social aspects are included, this research aims to demonstrate that isn't the case. The following section discusses in greater detail the literature related to innovation.

Innovation

Innovation has been a central research topic for decades, starting with Schumpeter's pioneering research on firms in the 1940s and has been referred to as an

issue "central to society" (Gupta et al., 2007; Drucker, 2006; Schumpeter, 1942; Van de Ven, 1986). According to Kim and Pennings (2009), "innovative efforts not only create new markets (e.g., Agarwal and Bayus, 2002; Knott and Posen, 2009), but also bring existing industries to new states, extend their life cycle, and reshape their competitive landscapes" (p. 368). Thompson (1965) defines innovation as the "generation, acceptance, and implementation of new ideas, processes, products or services" (page 2). Central to the concept of innovation is "newness" (Gupta et al., 2007), and the term has been referred to at many levels of analysis. For example, innovation can refer to technological innovation (Utterback, 1971), product innovation (Dougherty, 1992), process innovation (Davenport, 1994), marketing innovation (Levitt, 1962), organizational innovation (Daft, 1978), strategic innovation (Tushman and Anderson, 2004), innovation in how services are delivered (Frambach and Barkema, 1998), innovation in how a country is governed (Kitschelt, 1991), and so forth (Gupta et al., 2007). However, while the literature extensively explores the role of innovation in firms, little has been said about sustainable and/or green innovation due to its recency as a concern or focus of businesses.

Sustainable and Green Innovation

There is a limited stream of literature specifically related to sustainable and green innovation that suggests that stakeholder focus, strategic orientation, and core competence are key drivers of innovation and performance. This research stream indicates that while applying sustainability principles to innovation is a necessary next step of firms, the success of these initiatives remains difficult to measure.

Academicians have suggested that applying sustainability principles to innovation management is a necessary next step of organizations—both from a moral and business perspective (Hansen et al., 2009; Salzmann et al., 2008). From a moral perspective, researchers stress the role of organizations in addressing social and environmental challenges. This is very similar to the base of the pyramid (BOP) literature, which points out that social problems (such as poverty) can no longer be addressed from a purely political and governmental standpoint (Prahalad, 2005). The BOP literature concludes that organizations should build business communities and innovative solutions that enable the poor to participate in generating their own market-based solution to poverty. From a business standpoint, the sustainability literature highlights the potential of innovation to address or ameliorate global poverty (Hansen et al., 2009, page 684). Hansen et al. (2009) suggest that changes in laws and regulations add pressure to firms to innovate. At the same time, the sustainability movement itself offers organizations a new source of ideas for innovation. However, the authors indicate that sustainable innovation is still considered a risky venture by firms particularly because the assessment of such innovations (utilizing triple bottom line measures) can be difficult.

Esslinger (2011) argues that the logical next step in the evolution of the innovation-driven business model is to broaden the definition of a firm's stakeholders. Specifically, he suggests that a new business model is needed; one that considers a) consumers as individuals with a complex set of needs beyond product consumption who are members of a larger community, b) today's underrepresented communities, and c) tomorrow's communities (page 401). His argument suggests that a more ecological model of production, support and recycling is necessary for firms to become more sustainable. Consistent with Esslinger's assertions, the marketing literature defines sustainable innovation as typically driven by a concern for various

stakeholder groups, such as regulators, the local community, suppliers, shareholders, and others (Ferrell, et al., 2010). Customers and these various stakeholder groups are influencing change within organizations that involves rethinking the way business has been done in the past. While these stakeholder groups are considered in typical new product development, they are given added prominence in the design process when the innovation is related to sustainability.

According to Chabowski et al. (2011), as firms increasingly adopt a sustainable approach to conducting business, established norms and rules are altered (for example, employees at Herman Miller were asked to rethink the entire production process in an effort to eliminate PVC from a popular chair design, and eventually most of its products). These types of alterations require firms to better understand the needs of customers and stakeholders and reconfigure the way things are done by unlearning old routines and behaviors. Since sustainable innovation can impact marketing initiatives such as product design, channel selection, and communication and/or supply chain decisions such as component selection, materials sourcing, production, packaging, distribution and recycling (Closs et al., 2011, p. 101), this complex process can involve rethinking the entire value chain while reconfiguring resources to adapt to this emerging marketplace.

In their 2009 article, Hansen et al. developed the concept of sustainability-oriented innovations, offering a framework for firms to use as a tool in sustainable innovation. Their research indicated that stakeholders are loosely integrated into sustainability efforts and that the outcome of such efforts is difficult to measure because of the multidimensionality of sustainability. The authors conducted a series of interviews to confirm their research model and uncovered 27 target areas for sustainable innovation based on: innovation type (business model, product-service system, technology), life cycle (manufacture, use, or end of life), and target

dimension (triple bottom line). The authors highlighted a call for future research that identifies success measures for sustainable innovation and that integrates services into the business model. However, the authors did not offer criteria or procedures for assessing the performance of such measures.

Also in regard to the process of sustainable innovation, Ayuso et al. (2006) examined stakeholder dialogue and knowledge integration as a source of new ideas. The authors employed a capabilities perspective and found that investing in a stakeholder relationship enhanced the innovation process. The outcome of this study suggested that the firm's network of relationships in which it's embedded plays a role in its ability to learn about stakeholders impacted by the innovation process. The authors employed viewpoints stemming from the RBV and stakeholder theories and discovered that initiating a dialogue with critical stakeholders, particularly customers and employees, played a role in the innovation process. A key limitation, however, is the analysis was limited to a case study approach of examining two firms.

Also closely tied to sustainable innovation is the literature related to green innovation—innovation focused on minimizing environmental impact. One study closely related to this topic is by Menguc and Ozanne (2005), who adopted what they referred to as the natural-resource based view of the firm. The authors extend the RBV to acknowledge demands imposed by the natural environment and created the construct natural environmental orientation, which consists of entrepreneurship, CSR, and environmental commitment. The authors' empirical study determined that natural environmental orientation was positively and significantly related to firm profit and market share—and negatively related to sales share. The study, however, was limited to an orientation focused on the environment and only employed market and financial dimensions of performance.

A second study related to green innovation is by Dangelico and Pujari (2010), who examined motivations for firms pursuing green product innovation. The authors determined that environmental regulations offer a unique opportunity for firms, rather than simply imposing constraints. This study, unlike others, offered a glimpse into the risk of such ventures including an increase in public scrutiny by stakeholders. The authors limited the study to green products, however, and offered success measures based on environmental performance and market success. Dangelico and Pujari called for additional research examining environmental impact at a higher level (than the individual green project) and a deeper understanding of product portfolio management.

Finally, a third study related to green innovation is pertinent with regard to this dissertation. Chen (2008) examined green core competence and its effect on green innovation and the green image of firms. This was the first known study to explore core competence related to green innovation and environmental management. It divided the innovation construct into green process innovation and green product innovation, and similar to previously cited studies was limited to "green". An additional limitation is that this study was confined to the information and electronics industries in Taiwan. A contribution, however, is the suggestion that innovation related to these initiatives should include processes in addition to products.

The sustainable and green innovation research highlights the difficulty in measuring success in relation to innovation, particularly success other than financial or economic performance of the firm (e.g., the triple bottom line). It also underscores an opportunity to empirically test sustainable innovation and its impact on a multi-dimensional, multi-stakeholder perspective measure of performance. Additionally, very little is said in the literature in regard to what, other than a focus on the stakeholder, feeds

into sustainable innovation. Other than a general desire to "do good" or focus on a broadened set of stakeholders, these initiatives typically still lack in strategy and focus (Sheth et al., 2011). A need exists to develop, and empirically test, a model that encompasses various forms of innovation, as well as identifying drivers and contingencies.

In sum, the literature streams related to sustainable development, CSR, and innovation highlight important gaps in the literature as well as an opportunity to broaden our understanding of sustainable innovation. Specifically, this research will examine three gaps in our current understanding of sustainable innovation. First, what factors—or antecedents—enable a firm to do sustainable innovation? The literature indicates that a better understanding of stakeholder perspectives—and their needs—will assist in the innovation process. Evidence suggests customers are increasingly weighing environmental and social performance of the products and services they purchase (Huang and Rust, 2011; Closs et al., 2011). This perceived need and desire in the marketplace serves as a trigger to a firm's pursuit of sustainable innovation.

Similar to the missing link between antecedents and the process of sustainable innovation, a second gap in the literature is an understanding of the factors that act as contingencies of sustainable innovation. While topics such as organizational culture (Crittendon et al., 2011; Banerjee et al., 2003; Drumwright, 1994), a market orientated internal environment (Crittendon et al., 2011), as well as the complicated external environment (Chen, 2008) have been discussed, to the best of my knowledge, the specific moderating relationship between these variables and the paths-processes relationship have not been empirically tested. Therefore, to explore this missing link, I've

hypothesized that three variables will impact the relationship between antecedents and the processes of organizational learning, unlearning and sustainable innovation. Having a sustainable market orientation, the presence of intra-organizational trust and the influence of an internal champion are all predicted to positively impact this relationship.

Regarding a sustainable market orientation, Hult (2011) suggests that an organization achieves success (related to sustainability) to the extent that it aligns itself with the needs and wants of various stakeholder groups, including customers. Additionally, organizations are likely to achieve greater internal buy-in when a high level of intra-organizational trust exists. Finally, research has demonstrated a positive link between the presence of an internal "green champion" and the success of the firm (Cronin et al., 2011; Drumwright, 1994).

Finally, a third gap in the literature is whether sustainable innovation matters to triple bottom line performance. While there is much evidence of the link between innovation and performance (Hansen et al., 2009; Burns and Stalker, 1961; Hurley and Hult 1998; Porter, 1990; Schumpeter, 1934), sustainable innovation's impact on economic and non-economic performance is not known. Due to its complexity, we can expect sustainable innovation to be a much costlier endeavor than typical new product development and the market may not necessarily reward a company for taking the extra steps to making their offerings sustainable. Additionally, companies pursue sustainable innovation for non-financial purposes, namely environmental and social impact. But whether firms actually achieve these impacts from their sustainability innovation endeavors remains unknown. While the topic of the triple bottom line is increasingly emergent in the marketing literature, as best I know, the link between sustainable innovation and these three dimensions of performance remains uninvestigated.

This research examines these three gaps in the literature through a conceptual framework girded primarily in the dynamic capabilities theory and secondarily in the organizational learning and market orientation viewpoints. The following chapter offers a review of the dynamic capabilities theory and how it informs the theoretical framework.

CHAPTER II: THEORY DEVELOPMENT AND CONCEPTUAL FRAMEWORK

According to Lubin and Esty (2010), most companies pursuing sustainability "are flailing around with launching a hodgepodge of initiatives without any overarching vision or plan" (Sheth et al., 2011, p. 22). Further, Sheth et al. (2011) indicate that although firms have accepted the growing importance of initiatives related to sustainability, few firms are actually approaching these initiatives strategically with long-term goals in mind. Given this lack of strategic, proactive approaches to addressing initiatives related to sustainability as suggested by Sheth et al. (2011), I've chosen to examine this phenomenon through the lens of the dynamic capabilities theory. Because of the recent emergence and growing importance of sustainability in today's organizations, this theory is particularly relevant as it specifically addresses the exploitation of a firm's competences in uncertain, changing environments, such as for sustainability.

The dynamic capabilities theory stems from the resource-based view of the firm, which suggests that "the basis for competitive advantage resides in its resources and in how the firm structures, bundles, and leverages those resources" (Connelly et al., 2011, page 88). Further, Connelly et al. (2011) note that the resource-based view offers insight into sustainability by suggesting practices that can offer competitive advantage to the firm as well as lead firms to better assess how limited resources may be maintained or renewed over time. The dynamic capabilities perspective is particularly appropriate in that it extends this competence-based approach to account for uncertain changing marketplaces, such as those demanding sustainability from businesses.

The recent surge of sustainability into the vernacular of academics, businesspeople, and policymakers (Connelly et al., 2011) suggests that this field is rapidly evolving. As practitioners begin to address the challenges presented by social and natural environment, it becomes

imperative that they do so at a strategic level as suggested by Sheth et al. (2011) and Senge (2007). Doing so will require organizational learning as well as unlearning, or discarding old, ineffective ways of doing business.

Finally, theories of market orientation, organizational learning and unlearning will also inform this research insofar as they serve as critical processes (and strategic orientation, in the case of market orientation) that contribute to innovation and triple bottom line performance in the context of sustainability. In the following discussion, I highlight in greater detail the fundamental structure of the dynamic capabilities theory and detail how it fits within the context of sustainability. I will simultaneously present the theoretical framework as it is informed by this theoretical perspective.

Dynamic Capabilities

The dynamic capabilities approach, developed by Teece, Pisano and Shuen (1997) stems from "efficiency-based" theories that suggest firms gain advantages by utilizing firm-level advantages and increasing efficiency and effectiveness. According to Teece, et al. (1997), early works that influence this theory include Schumpeter (1942), Penrose (1959), Nelson and Winter (1982), Prahalad and Hamel (1990), Teece (1976, 1986a, 1986b, 1988), and Hayes, Wheelwright and Clark (1988). This theory stresses the importance of "exploiting existing internal and external firm-specific competences to address changing environments (p.510)" and the authors define dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (p.516).

Eisenhardt and Martin (2000) consider dynamic capabilities to be "the antecedent organizational and strategic routines by which managers alter their resource base – acquire and

shed resources, integrate them together, and recombine them – to generate new value-creating strategies (Eisenhardt and Martin, 2000, page 1107; Grant, 1996; Pisano, 1994)". Eisenhardt and Martin (2000) slightly adapt the definition provided by Teece et al. (1997) by suggesting that "capabilities are organizational and strategic routines by which firms achieve new resource configurations" in developing and changing markets (page 1107). Additionally, the dynamic capabilities view suggests that it's difficult to replicate or imitate the behavior and performance of firms.

In terms of the market, the Teece et al. (1997) use the term "dynamic" to refer to "situations where there is rapid change in technology and market forces, and 'feedback' effects on firms" (page 512). The emphasis is on the firm, not the competition. In other words, a firm that has organizational capabilities and efficiencies that aren't easily replicated by competitors will come out on top, regardless of the moves made by other firms. Rather than worry about what the competition is doing, the authors recommend that managers work on developing their own sources of competitive advantage. This is very similar to the resource-based view (RBV), which focuses on strategies for exploiting firm-specific assets and resources. However, the dynamic capabilities approach extends the RBV into dynamic markets that are changing. The dynamic capabilities framework differs from the RBV by emphasizing two elements:

- 'Dynamic' refers to "the capacity to renew competences so as to achieve congruence with the changing business environment.
- 'Capabilities' emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment" (page 515).

According to Eisenhardt and Martin (2000), RBV breaks down in high-velocity markets, where the strategic challenge is maintaining competitive advantage when the duration of that advantage is inherently unpredictable, where time is an essential part of strategy, and the dynamic capabilities that drive competitive advantage are themselves unstable processes that are challenging to sustain. Since sustainability is becoming an increasingly important goal of today's organizations (Closs et al, 2011, p.101), the competitive landscape is unpredictably altering. The dynamic capabilities approach is appropriate in that it suggests that a firm's capabilities (its paths or history, processes, and positions) will allow for it to reconfigure itself in turbulent environments.

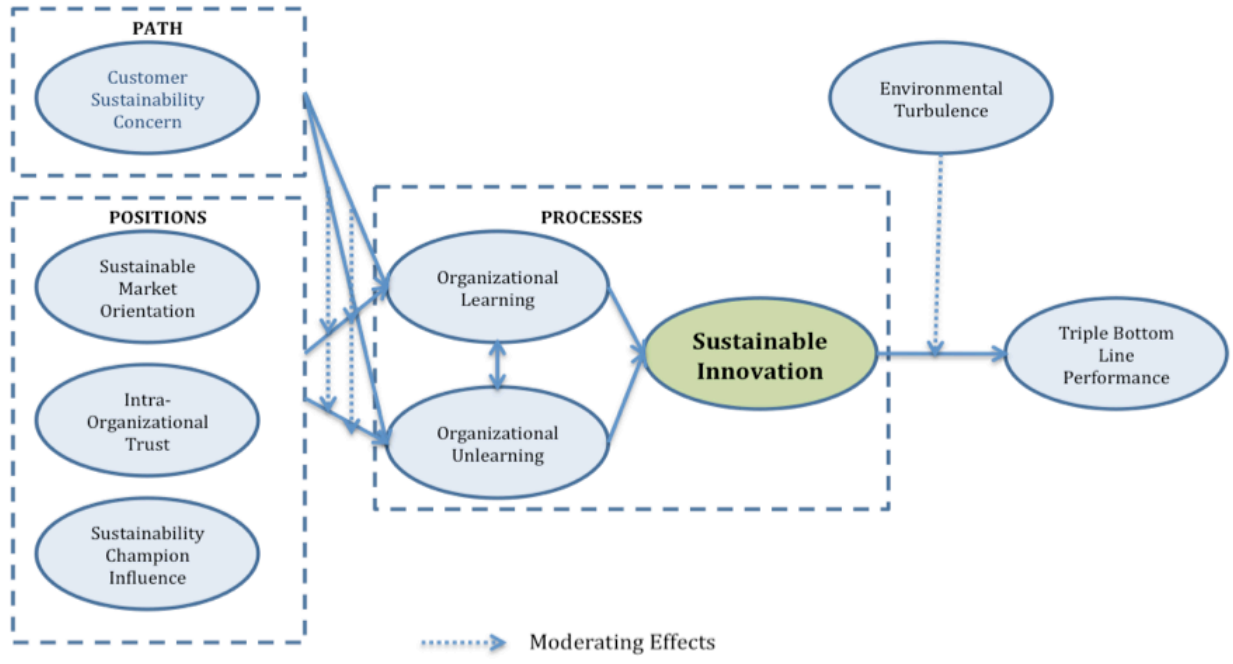
In summary, the dynamic capabilities theory informs this dissertation research in that it offers a view into how a firm reconfigures its processes in order to gain competitive advantage in an evolving marketplace. Specifically, in the context of sustainability, the processes of learning, unlearning, and innovation are particularly relevant as firms revisit and alter or replace old, ineffective and wasteful practices. The dynamic capabilities theory addresses this phenomenon by suggesting that it's a firm's capabilities, specifically its ability to unlearn inefficient ways of doing business and learn better practices, which allow it to effectively innovate in turbulent markets. In the following section, I go into greater detail into how this theory drives the conceptual framework for this dissertation.

Conceptual Framework

The dynamic capabilities theory focuses on exploiting existing capabilities while developing new ones. The literature delineates three "classes" of factors that explain a firm's source(s) of competitive advantage: processes, positions, and paths. Teece et al. (1997)

summarize these classes of factors as follows: “Organizational processes, shaped by the firm’s asset positions and molded by its evolutionary and co-evolutionary paths, explain the essence of the firm’s dynamic capabilities and its competitive advantage” (page 518). Thus, as indicated in the theoretical model, and as dictated by the theory, paths and positions lead to processes, which determine outcomes. Therefore, in the following discussion I identify and define constructs that fall into each of these three broad categories (paths, positions, processes) that act as antecedents and mediators of sustainable innovation, as well as constructs that function as potential moderating, control and dependent variables of sustainable innovation. Together, these constructs form the conceptual framework or research model. In some cases, constructs are taken directly from the literature; in others, they are adapted or created based on the extant literature.

Figure 1. Conceptual Framework: Sustainable Innovation



Paths

"Paths" refers to the strategic alternatives available to a firm, including any and all existing path dependencies. Since "paths" refer to the strategic alternatives available to a firm (Teece et al., 1997), external drivers of innovation fall into this category. In this research, that driver is customer sustainability concern. The theoretical framework positions the existence of a market for sustainable products and services as the impetus for a firm's desire to learn and unlearn to pursue innovation related to sustainability. It is this potential market that allows firms to see beyond challenges and envision the potential to help others and/or the environment without sacrificing the firm's economic agenda. Therefore, I present one critical "path" variable in the theoretical framework: customer sustainability concern.

Customer Sustainability Concern

While the triple bottom line of social equity, environmental integrity, and economic prosperity regularly appear in discussions related sustainability research, very little is said in regard to *why* corporations act (or not) in ways that are considered socially, environmentally, and economically responsible (Crittendon et al., 2011; Bansal, 2005; Russo, 2003). Flannery and May (2000) have called on the academic community to better understand the factors that influence these decisions so that researchers and practitioners can more strategically develop systems and programs to address sustainable practices. The dynamic capabilities theory is an appropriate fit to fill this gap as it specifically highlights strategic paths, or antecedents, that lead firms to adapt in a rapidly evolving marketplace. Specifically, I posit that a perceived concern in the marketplace is a critical driver of these actions.

Perceived customer sustainability concern is defined as a firm's awareness of customers' desire for products and services that are environmentally and socially conscious. This construct serves as a reason for firms to undertake these initiatives (e.g., adoption of the stakeholder perspective, as discussed earlier). This variable is particularly relevant due to its representation of the *perceived* preferences and demands of the firm's existing and targeted consumer and stakeholder base.

The literature indicates that buyers are increasingly considering the environment and social impact of products and services they buy (Closs et al., 2011, p. 102) as they recognize the harmful impact of irresponsible consumption. Examples of this phenomenon include consumers raising concerns to Nike about labor practices in the countries in which it operates overseas factories; Walmart's perceived negative impact on local communities (due to high employee turnover due to discontent, poor benefits policies, low wages, and such); and McDonald's impact on consumer health (as evidenced by their perceived role in the obesity epidemic among adults and children) and their impact on the natural environment (due to previously-used Styrofoam containers, waste generation in restaurants, and the sheer magnitude of the cattle production (a known polluter) required to fulfill its product demands. As advocate groups become more vocal about these types of issues, consumers are demanding responsible action by the firms they support and frequent. This serves as a powerful driver of organizational learning, unlearning of old behaviors and routines, as well as innovation, as firms adapt to learn about and meet the changing needs of buyers.

Diamantopoulos et al. (2003) examined the role of socio-demographics in profiling "green consumers," while arguing that firms often resort to the sole use of demographic information in market segmentation because of its ease of access. In their study, the authors

define the environmental consciousness construct as consisting of: "(i) knowledge about green issues, (ii) attitudes towards environmental quality, and (iii) environmentally sensitive behavior" (Diamantopoulos et al., 2003, p. 467). Although this study is limited to understanding "green consumers" and doesn't account for the two other dimensions of a triple bottom line performance, it's relevant in that it addresses a customer's role as a driver of sustainable innovation, whether it's in the form of new product development, changes in the supply chain, or enhancements in the marketing of its products and services. I will later discuss how this construct inspired the one used in this study.

In sum, I've hypothesized that *paths* and *positions* precede *processes* in that "where a firm has been" shapes the firm's opportunities and the efficiency of internal processes. Specifically, customer sustainability concern serves as an important driver of organizational processes focused on sustainable innovation. This positive relationship suggests that firms pursue these initiatives as they interpret the need among stakeholders in the marketplace. The theoretical framework suggests that once this understanding is established, firms pursue the processes of organizational learning, unlearning and innovation to meet the perceived needs of the consumers and stakeholders. The following section discusses the positions, or resources of a firm, that allow them to better serve this market.

Positions

"Positions" allude to the resources available to a firm, both tangible and intangible (Teece et al., 1997). Specifically, the authors suggest that positions include: "its current specific endowments of technology, intellectual property, complimentary assets, customer base, and its external relations with suppliers and complementors," (p. 518). Serving new or unfamiliar

markets such as those demanding sustainable innovations requires resources (financial and otherwise), and access to or the presence of such resources becomes particularly important for the long-term focus required by firms entering these markets. The organizational climate, an intangible resource of the firm, can prove to be critical for an organization to be productive and effective; whether an organization's employees choose to embrace change can be hindered by a climate that is hostile or unfriendly.

Many types of resources may impact competitive advantage including: financial resources, physical resources, human resources, intangible technological resources, intangible marketing resources (Slotegraaf et al., 2003, p. 297). In the theoretical framework, three constructs represent position variables are hypothesized to be antecedents of sustainable innovation and ultimately performance: a sustainable market orientation, intra-organizational trust and the influence of a sustainability champion. These intangible resources of the firm are particularly relevant due to their impact on managerial decision-making and organizational strategy related to the pursuit of evolving markets. In other words, an organization cannot hastily jump into the decision to pursue an innovation-related strategy without first having an internal climate that is responsive to these types of changes.

As noted earlier, Sheth (2011) indicated that a missing element of much of the sustainable innovation in today's marketplace is a viable long-term strategy. Internal resources, or *positions*, such as a sustainable market orientation, intra-organizational trust and the influence of a sustainability champion are critical elements in the pursuit and acceptance of a long-term strategic vision focused on sustainability. A better understanding of their role and their impact on how a firm goes about pursuing these markets is another contribution of this study. The

following discussion will highlight the contributions of each of these variables in better understanding the process of sustainable innovation.

Sustainable Market Orientation

As indicated in the framework, the relationship between paths and processes directly affects and is moderated by positions. The first *position* variable I consider is a sustainable market orientation, which suggests that a once a firm detects a need in the marketplace, its internal culture, or more specifically, its sustainable market orientation will impact its ability to learn/unlearn and eventually innovate. The definition of a sustainable market orientation is based on the 2011 article by Hult in which he indicates that "a firm achieves market-based sustainability to the extent that it strategically aligns itself with the market-oriented product needs and wants of customers and the interests of multiple stakeholders concerned about social responsibility issues involving economic, environmental and social dimensions" (page 1). Based closely on Hult's notion of market-based sustainability, I therefore define sustainable market orientation as the strategic alignment of the market-oriented needs and wants of customers and the interests of multiple stakeholders concerned about environmental, social and economic dimensions of performance.

The notion of a sustainable market orientation is adapted from the original market orientation literature. A market-oriented organization's purpose is to discover and meet the needs of its target markets, and to do so more effectively and efficiently than its competitors. A market orientation suggests that an organization's long-term focus, or culture, leads it into sometimes-challenging pursuits, such as sustainable innovation. Consistent with this notion, Kohli and Jaworski (1990) introduced a theory of market orientation, originally defined as "the

organizationwide generation, dissemination, and responsiveness to market intelligence" (Kohli and Jaworski, 1990, p. 3). Since its introduction, this concept has been tested, refined and built upon. The result is that researchers have conceptualized market orientation as a set of activities (Kohli and Jaworski, 1990), a resource (Hunt and Morgan, 1995), or an aspect or organizational culture (Day, 1994; Deshpande, Farley and Webster, 1993; Slater and Narver, 1995; Narver and Slater, 1990) (Hurley and Hult, 1998, p. 42).

Decades of empirical research indicate a strong relationship between market orientation and profitability, sales growth and new product success (e.g., Jaworski and Kohli, 1993; Narver and Slater, 1990; Slater and Narver, 1994) as well as organizational performance, innovation, and employee consequences (see Kirca et al., 2005; Cano et al., 2004; Jaworski and Kohli, 1996). Although debate continues, the benefits of a market orientation are well-documented in the literature and the general conclusion is that market orientation is crucial to an organization's success (Slater and Narver, 1998; Kirca et al., 2005).

Narver and Slater (1990) define market orientation as "the organization culture (culture and climate, Deshpande and Webster, 1989) that most effectively and efficiently creates the necessary behaviors for the creation of superior value for buyers and, thus, continuous superior performance for the business" (Narver and Slater, 1990; Aaker, 1988; Kohli and Jaworski, 1990; Kotler, 1984; Kotler and Andreasen, 1987; Peters and Austin, 1985; Peters and Waterman, 1982; Shapiro, 1988; Webster, 1988) (p.21). Narver and Slater (1990) suggest a market orientation is a one-dimension construct consisting of three components: customer orientation, competitor orientation, and interfunctional coordination, as well as two decision criteria: long-term focus and profitability (p. 22).

The sustainability literature suggests that firms addressing sustainability-related stakeholder interests are typically entering into uncharted territory by reassessing their notion of "the bottom line" and challenging their organizations to create "new, environmentally-sustainable and socially-responsive organizations, while enhancing shareholder value" (Closs et al., 2011, p.102). Therefore, the drive to create such fundamental change within an organization should be part of a deeper organizational culture that is committed to engaging in understanding current and future needs of stakeholders. In other words, the sustainability literature would suggest that these fundamental changes in a firm's perspective and value proposition should not be undertaken hastily. This notion is further emphasized by Slater and Narver (1998) who state "market-oriented businesses also escape the tyranny of the served market by searching for unserved markets (Hamel and Prahalad, 1994). The unserved market represents potential—those who might be customers. New products and unserved markets are the catalyst for organizational renewal in the market-oriented business" (page 1003). In this research, sustainability represents an underserved market in which a firm may find organizational renewal as well as the potential to serve an under-represented portion of the market.

According to Slater and Narver (1998), "market-oriented businesses are committed to understanding both the expressed and latent needs of their customers, and the capabilities and plans of their competitors through the processes of acquiring and evaluating market information in a systematic and anticipatory manner. They continuously create superior value by sharing the knowledge broadly throughout the organization and by acting in a coordinated and focused manner (e.g., Slater and Narver, 1995)" (Slater and Narver, 1998, p. 1003). "…The critical challenge for any business is to create the combination of culture and climate that maximizes organizational learning on how to create superior customer value in dynamic and turbulent

markets, because the ability to learn faster than competitors may be the only source of sustainable competitive advantage" (Slater and Narver 1995, page 63; deGeus 1988; Dickson 1992).

The literature also suggests that firms addressing these markets often lack a strategic focus (Sheth, et al., 2011), therefore indicating the relevance and importance of having in place a strategic orientation focused on understanding and addressing the latent needs of buyers. Understanding how the inclusion of a stakeholder orientation into the values of a firm impacts organizational processes is part of the contribution of this research. However, this research also suggests that two other variables are hypothesized to impact the relationship between paths and processes: intra-organizational trust and the influence of a sustainability champion.

The definition of a sustainable market orientation is based on the 2011 article by Hult in which he indicates that "a firm achieves market-based sustainability to the extent that it strategically aligns itself with the market-oriented product needs and wants of customers and the interests of multiple stakeholders concerned about social responsibility issues involving economic, environmental and social dimensions" (page 1). Based closely on Hult's (2011) notion of market-based sustainability, sustainable market orientation is defined here as the strategic alignment of the market-oriented needs and wants of customers and the interests of multiple stakeholders concerned about environmental, social as well as economic dimensions of performance.

This research positions sustainable market orientation as directly impacting and moderating the relationship between a perceived need in the market and organizational processes such as learning and unlearning. This suggests that the commitment to learn about, understand and efficiently serve the needs of these new markets is firmly embedded as a cultural component

of the organization. The extent to which a firm is sustainably market oriented will impact its ability to learn and unlearn in the innovation process.

While it has already been said that firms addressing these markets often lack a strategic focus (Sheth, et al., 2011), this highlights the growing of having in place a strategic orientation focused on understanding and addressing the latent needs of buyers. Understanding how the inclusion of a stakeholder orientation into the values of a firm impacts organizational processes is part of the contribution of this research. However, this research also suggests that two other variables are hypothesized to impact the relationship between paths and processes: intra-organizational trust and the influence of a sustainability champion.

Intra-Organizational Trust

The second *position* variable is intra-organizational trust. The organizational climate can prove to be critical for an organization to be productive and effective; according to Nakata et al. (2008), intra-organizational trust is essential for superior firm performance (p. 487). Whether an organization's employees choose to embrace change, such as the decision to pursue sustainability initiatives, can be hindered by an internal climate that is hostile or unfriendly. Alternatively, "employees who trust one another experience significant work efficiencies" (Nakata et al., 2008, p. 487; Kramer and Tyler, 1996). Thus intra-organizational trust may be a powerful component of an organization engaged in sustainable innovation, possibly directly contributing to and moderating the relationship between an organization's paths (customer sustainability orientation) and processes (learning, unlearning, and innovation).

Trust is defined by Huff and Kelley (2003) as "the willingness of a party (the trustor) to be vulnerable to the actions of another party (the trustee) based on the expectation that the trustee

will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party (p. 82; Mayer et al., 1995). The authors suggest that trust operates as a springboard for organizations to embrace opportunities in rapidly changing environments (Kumar, 1996; Yamagishi et al., 1998).

Huff and Kelley (2003) define trust as specific to the organization. They offer the following definition of internal trust: "the climate of trust within an organization, defined as positive expectations that individuals have about the intent and behaviors of multiple organizational members based on organizational roles, relationships, experiences, and interdependencies (Huff and Kelley, 2003, p. 82; Shockley-Zalabak et al., 2000). The authors go on to suggest that high levels of trust enhance teamwork, leadership, goal setting and performance appraisal (Jones and George, 1998; Mayer et al., 1995; McAllister, 1995) and contribute to employee satisfaction and organizational commitment (Flaherty and Pappas, 2000). Nakata et al. (2008) extend this definition to also include three components of trust:

> "Intra-organizational trust is defined as the positive expectations that workers across the organization have about one another's abilities, actions, and motives (Huff and Kelley, 2003). It consists of cognitive, affective, and moral dimensions, and describes the perceived intent and behaviors of organizational members (Chowdhury, 2005; Hosmer, 1995; McAllister, 1995) (p. 489).

Based on the theory and conceptual framework, this is the definition most appropriate for this research. Employees may be more likely embrace radical ideas such as sustainability initiatives if they are in a high-trust environment.

Sustainability Champion Influence

Finally, the third *position* variable that serves as a resource to the firm is the influence of a sustainability champion. Based on the extant literature, this research positions the influence of

a sustainability champion together with intra-organizational trust and a sustainable market orientation as having an impact on the relationship between *paths* and *processes*. The literature indicates that the potential for members of a firm to truly embrace sustainability as part of its value proposition requires an individual, or group of individuals, leading the implementation of the program (Cronin Jr. et al., 2011, p. 164).

According to past studies, this person (or persons) plays a critical role in instituting organizational policies (Drumwright, 1994) and that the greatest buy-in is achieved when this person is in a managerial role (Cronin Jr. et al., 2011). Additionally, according to Cronin Jr. et al (2011), "research suggests that acquiring buy-in from others within the organization is critical to the success of new environmental policy (page 164; Carter and Jennings, 2004; Drumwright, 1994; Handfield et al., 1997, Willard, 2008). Thus, the influence of a sustainability champion as a moderator between paths and processes is supported by the literature, which suggests that this role is a critical success factor for firms pursuing sustainability initiatives.

The importance of the sustainability champion was also clearly evidenced in the Herman Miller case, as was discussed earlier. A champion led the firm through the implementation of its new cradle-to-cradle design protocol, ensuring that others in the industry (key suppliers, for example) understood the new process as well. The case quotes this person as having the "drive, vision and connections" to make this new protocol standard across all industries (Lee and Bony, page 7). Since this new design required support from across all departments within the organization, in addition to firms in other industries, having this internal champion proved critical to a successful outcome.

The literature also suggests that the influence of an internal champion (typically a manager) is an antecedent for various roles of, and within, the organization. Studies have

measured the impact of champions on commercialization of knowledge assets (e.g., Lichtenthaler and Ernst, 2009); IT Usage (e.g., Barczak, Sultan and Hultink, 2007); others within the organization (Markham, 1998), and product development environments, practices and performance (Markham and Griffin, 1998). The literature suggests that there are three major roles (e.g., Frost and Egri, 1991; Hauschildt and Kirchmann, 2001) of a champion within an organization: technical champions, executive champions, and project champions (Lichtenthaler and Ernst, 2009, p.373).

Descriptions of champions range from foolish risk takers to charismatic and heroic project supporters. Markham (1998) proposes that the champion undertakes three key activities 1) during development, he or she adopts the innovation in a personal way, 2) he or she contributes to the development of the innovation by promoting it internally during the development process, and 3) he or she "sponsors" the innovation by incurring risk by visibly advocating for the project, overcoming opposition, and enlisting greater support (Markham, 1998, p. 495).

In this context, it is particularly important that a champion exists within the organization to help others to understand the benefits of pursuing sustainability, to mitigate possible difficulties and challenges. It is worth noting that when innovating under uncertain conditions, e.g., engaging in radical innovation, empowering a product champion can contribute to success for a firm (e.g., Tellis et al., 2009). Under some circumstances, a firm may be inclined to abandon operations after difficulty rather than seek out novel solutions to address these markets. A champion may alleviate or mitigate the desire to do so.

Processes

Broadly defined as "routines," "processes" shape the way a firm does things (Teece et al., 1997). According to the authors, "organizational processes have three roles: coordination/integration (a static concept); learning (a dynamic concept); and reconfiguration (a transformational concept)" (page 518) and they are very difficult to replicate. While paths are predominately based on an organization's history and its strategic alternatives, processes relate to its current state and how it operates. Based on the literature and theoretical relevance, I have chosen three inter-connected variables that fit into this category: organizational learning, unlearning, and innovation. In the following discussion, I will discuss and define each of these three constructs.

Organizational Learning

The first *process* variable in my theoretical framework is organizational learning. Proponents of the market orientation and dynamic capabilities views suggest that organizational learning is a critical component of the innovation process (Slater and Narver, 1995). This dissertation highlights the important role of organizational learning in the innovation process insofar as sustainability efforts require a distinct knowledge of how to best create value for various stakeholder groups, as discussed above.

Theories related to organizational learning were introduced by Argyris and Schon (1978, 1996) among many other early scholars (such as Cohen, 1991; Cyert and March, 1963; Daft and Huber, 1987; Daft and Weick, 1984; Dixon, 1992; Huber, 1991; Jelinek, 1979; Lawson and Ventriss, 1992; Sackmann, 1991; Simon, 1991; Walsh and Ungson, 1991; Weick, 1979; as cited by Sinkula, 1994). Sinkula (1994) discusses a lack of integration between the organizational

learning literature and the marketing literature until the early 1990s, when MSI and the AMA called for additional research on the role of organizational learning in the field of marketing. Sinkula's early work, in addition to a later work by Slater and Narver (1995), pioneered the research on the impact of the organizational learning process on performance.

Argyris and Schon's (1978) early work emphasized a cyclical process in which individuals share information, creating organizational memory that takes the form of organizational values and norms. This memory then guides the actions of the organizations, thus emphasizing the fundamental importance of individuals in the development of organizational learning (Argyris and Schon, 1978; Sinkula, 1994). The authors stress the fundamental role of the individual in the generation of knowledge, suggesting the individual is critical to the learning process. While individuals within organizations come and go, it is the process of preserving of this knowledge that is important.

Sinkula et al. (1997) later define organizational learning as "the process through which individual knowledge is transferred to the organization so that it can be used by individuals other than the progenitor" (Sinkula et al., 1997, p. 306; Sinkula, 1994). The fit between organizational learning and other variables in this study, such as market orientation and performance, have been discussed in the literature. For example, in their work examining the role of market orientation as a foundation for organizational learning, Slater and Narver (1995) define organizational learning as: "…the development of new knowledge or insights that have the potential to influence behavior (e.g., Fiol and Lyles, 1985; Huber, 1991; Simon, 1969; Sinkula, 1994). The authors suggest that one can presume that learning facilitates behavior change that then leads to improved performance" (Fiol and Lyles 1985; Garvin 1993; Senge 1990; Sinkula 1994) (Slater and Narver, 1995, p.63). This assertion offers added rationale for the importance of

organizational learning in this research; presumably, organizational learning is part of the vehicle that leads firms to learn about markets, followed by efficient and effective innovation, and thus enhanced performance.

It is worth reiterating that, in my framework, organizational learning is characterized as a process. Therefore, it will be operationalized as such and this research will aim to understand behaviors and actions that impact the process, rather than an orientation or culture. Consistent with this process view, I adopt the process-oriented definition set forth by Zhou et al. (2005): "Organizational learning represents the development of new knowledge or insights that facilitate performance-enhancing organizational changes," (Zhou, et al., 2005; Sinkula, 1994; Slater and Narver, 1995). The authors indicate that the learning process includes information acquisition, information dissemination, shared interpretation, and organizational memory (Zhou et al., 2005, p.46; Sinkula, 1994; Slater and Narver, 1995). The authors further suggest that learning organizations that have mastered these processes will be able to maintain a steady pace of long-term learning (Sinkula, 1994) and "reconfigure its structure and reallocate its resources to foster breakthroughs" (Slater and Narver, 1995; Zhou et al., 2005, p. 46).

This process, as discussed above by Zhou et al., (2005) is the conceptualization that best fits theoretically when examining sustainability. As suggested by the authors, it is critical for an organization to be flexible in how it learns, interprets and shares knowledge internally. In order to create a value proposition geared toward the needs of various stakeholders, firms must undergo a process of learning that involves understanding the interests of these stakeholder groups, many of which may have been previously ignored.

As firms learn how to become more sustainable, a critical component of the innovation process is how they discard old, irrelevant behaviors and routines. As was evidenced by the Herman Miller case, these two processes are both crucial to sustainable innovation. The following section discusses the second component of this process: unlearning.

Organizational Unlearning

The second *process* variable in my framework is organizational unlearning. Although this term has appeared in the literature for three decades (e.g., Hedburg 1981), it is still nascent in that the marketing and management fields have not accepted a universal definition and few empirical studies have tested and established a scale with corresponding measures. Tsang and Zahra's (2008) definition identifies the discarding of old routines as a critical component of the unlearning process. In order to better understand and incorporate that needs of various stakeholders into the innovation process, an organization must unlearn inefficient and inappropriate business practices thus allowing them to create a more appropriate and desired value proposition.

Organizational learning and unlearning are closely related, as indicated in the discussion by Huber (1991). Huber breaks the learning process into four learning-related constructs including: knowledge acquisition, information distribution, information interpretation, and organizational memory. Unlearning, or discarding of routines, takes place during the process of information interpretation. Huber states that unlearning can lead to "either a decrease, or an increase, in the range of potential behaviors" of a firm (p. 104) and that it may open the way for new learning to occur. At the time, he posited that unlearning, and thus its role in an

organization, merits empirical study. This need for a greater understanding of the relationship between unlearning and learning still exists today.

To form a definition of organizational unlearning, Tsang and Zahra (2008) offer it has the following elements:

- The discarding of old routines (removal from memory), without a value judgment on those routines (new routines are not always better than the old);
- Might not coincide with improvements in performance;
- May be an isolated phenomenon; discarding a routine does not always result in the replacement of it;
- Includes both the behavioral and cognitive dimensions of learning;
- Learning can occur without unlearning (page 1450);
- Learning and unlearning occur at the same time (page 1452) and sometimes unlearning can happen without learning.

It is worth noting that there is a difference between individual and organizational unlearning. Unlearning at the organizational level requires unlearning by individuals; however, the reverse isn't always true (Tsang and Zahra 2008, page 1444; also Sinkula, 2002, p.255). Tsang and Zahra (2008) describe individual unlearning as follows: "As '(i)ndividual level factors, such as individual skills, habits, and 'procedural knowledge' naturally contribute the phenomenon of organizational routines' (Pentland and Feldman, 2005, p. 795), the challenge in organizational unlearning often lies in erasing the contents of human storage bins. Unless the members concerned are removed or expelled from the organization, individual unlearning is involved. Individual unlearning is often a 'cumbersome and energy-consuming process'

(Hedberg, 1981, p.18)," (Tsang and Zhara, 2008, p.1445). The authors go on to discuss the challenge of how routines become part of established work habits that are often difficult to remove. Additionally, "learning anxiety" and "survival anxiety" often prohibit individuals from unlearning (Tsang and Zahra, 2008, p. 1445; Coutu, 2002).

Other authors conceptualize this complicated process as one that takes place on a continuum, rather than as a single occurrence. Akgün et al. (2007) conceptualize unlearning on a continuum between continuous change and planned (discontinuous) change. The authors suggest that the most fundamental changes in beliefs and routines take place in high unpredictability and high change environments, often resulting in changes in strategy. They refer to this type of unlearning as reinventive unlearning and state: "in this type of environment, there exists a vast amount of information and a concurrent number of resulting interpretations. Also, information enters and leaves in numerous directions over short periods of time, losing its validity in an unpredictable way" (p. 802). The authors believe that this type of unlearning is most difficult in complacent firms that lack a clear strategic vision. Such unlearning may be required for firms innovating in uncertain, evolving markets where new demands are being placed on firms, such as those with increasing sustainability requirements.

Based on the preceding discussion, I define organizational unlearning as "the discarding of organizational information or routines and/or individual habits or beliefs". Based on the literature, components of this concept include:

- The discarding of information, routines, habits or beliefs is done without a value judgment
- The discarding does not always coincide with the generation of new knowledge, routines, habits and beliefs.

- Organizational unlearning requires unlearning by individuals.
- May coincide with changes in personnel.
- May or may not be planned or predictable.
- More difficult for firms without a clear strategic vision.

The relationship between unlearning and learning is particularly interesting since one can occur without the other or both can occur simultaneously (Tsang and Zahra, 2008). Better understanding this complicated relationship between these variables is one of the key contributions of this study. Additionally, this research aims to understand how these two variables, together and individually, impact sustainable innovation, within organizations aiming to be more sustainable.

Sustainable Innovation

Finally, the third *process* variable in the framework is sustainable innovation. As stated by the dynamic capabilities perspective, processes shape the way an organization "does things". In addition to learning and learning, sustainable innovation is a critical process in the effort to meet stakeholders' desire for sustainable efforts on the part of organizations. In this research context, the innovation can pertain to the creation of new products or services, changes in internal processes, changes in the value chain, distribution alterations, recycling, and other activities of the firm.

Much of the literature examines innovation as an outcome (e.g., examining the antecedents and drivers of incremental vs. breakthrough innovations) or a strategic orientation (e.g., the capacity to innovate). As stated earlier, the definition of sustainable innovation used in

this dissertation is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity—what is otherwise referred to as the 'triple bottom line'. This definition acknowledges or reflects that sustainable innovation is a process but that it is not specifically confined to generating new products. The reason is that it can include a wide range of possible initiatives, and that these initiatives demand that firms rethink the entire process of innovation, not simply create new products or services.

Liao et al. (2009) study innovation (as opposed to innovativeness) using a dynamic capabilities framework: "Firm innovation, or innovation practice and performance, is defined as a firm's ability to create new value propositions through offering of new products and services, adopting new operating practice, technological, organizational, or market-oriented, or creating new skills and competencies (e.g., Miles et al., 1978; Schumpeter 1938). That is, firm innovation is an encompassing activity that can include wide range of activities such as producing new tangible value propositions or creating new ways of conducting business. The ultimate purpose for firm innovation is the creation of customer value in the forms of new services and new products" (page 268).

As stated earlier, innovation in a sustainability context could result in new products or services, changes in the supply chain, or changes in the processes within an organization. To engage in innovation, however, a firm must possess the tools necessary to do so. The dynamic capabilities theory suggests that a firm's positions, or resources, are firm-specific assets that are difficult or impossible to replicate (Teece et al., 1997, p. 516). According to Teece et al. (1997), these positions, or assets, determine a firm's competitive advantage at any point in time and are knowledge assets and assets complementary to them, such as reputational and relational assets.

The following discussion expands the research model to discuss the outcome: triple bottom line performance.

Outcomes

A financial agenda should not be sole reason for pursuing sustainability-related projects. Underlying much of this discussion has been the notion that firms often enter (or should enter) these pursuits with the intention of limiting their impact on the environment and/or implementing social change. Therefore, the outcome variable in this study, performance, is defined as: multi-dimensional performance consisting of measures of economic prosperity, social equity, and environmental integrity, otherwise known as the Triple Bottom Line. While this is the overarching definition of performance, each of these dimensions is discussed in greater detail in the following section.

Economic Prosperity

Until recently, profit maximization was often accepted as the only responsibility of corporations. After all, corporations that do not provide returns to its stakeholders aren't sustainable or viable in the long term. Although performance can be multi-dimensional, the financial aspect of performance remains highly important to firms pursuing markets. Because of the complexities of understanding and addressing the needs of various stakeholder groups, firms must maintain an economic mission in order to remain a viable, functioning organization.

In their 2011 article, Sheth et al. position sustainability as a business goal that broadly translates into making a positive impact environmentally, socially, and economically. Regarding the economic dimension, the authors state the following: "Sometimes economic responsibility is

taken to merely imply the conventional bottom-line of financial profitability, as reflected in one of the popular 3Ps interpretations of sustainability: 'planet, people and profit.' In other instances, economic responsibility is interpreted as having two distinct—but not mutually exclusive—aspects: one relating to the firm-centric aspect of financial performance, the other relating to economic interests of external stakeholders, such as a broad-based improvement in economic well-being and standards of living" (page 24; Daub and Ergenzinger, 2005; Dahlsrud, 2008; Jackson, 2009).

Social Equity

According to Bansal (2005), "the social equity principle ensures that all members of a society have equal access to resources and opportunities. Central to the definition of sustainable development is the recognition that 'needs,' present and future, must be met (WCED, 1987). Human needs not only include basic needs such as food, clothing, and shelter, but also include a good quality of life such as health care, education, and political freedom (IUCN, UNEP, and WWF, 1996; United Kingdom Secretaries of State for the Environment, 1994)" (Bansal, 2005, page 198).

Bansal (2005) indicates that even a "narrow notion" of sustainability entails a concern for social equity between and within generations, implying "that future generations, indigenous peoples, and the disenfranchised are entitled to the same level of resources as more privileged people in developed countries (page 198; Gladwin, Kennelly, and Krause, 1995). Bansal's definition, however, is more narrow than what was discussed earlier in regard to sustainability, which suggested social equity deals with addressing the needs of a broader stakeholder group, which is more appropriate for this dissertation.

Environmental Integrity

Scholars and practitioners alike are emphasizing the importance of considering the environment in the innovation process. Bansal (2005) suggests that the environmental integrity principle ensures that the activities of humans do not "erode the earth's land, air, and water resources" (page 198). Further, Bansal states that "population growth, combined with excessive consumption, escalating pollution, and depletion of natural resources, threatens environmental integrity (Pearce, Markandya, and Barbier, 1989; WCED, 1987) …and that human activities can have a significant negative impact on the natural environment including, but not limited to, decreased biodiversity, ozone depletion, accumulation of greenhouse gases, waste management, deforestation, and toxic spills (Doering et al., 2002) (page 198)". In sum, Bansal argues that if the natural environment is sacrificed, basic elements such as air, water and food will also be compromised (page 198).

Based on the preceding theoretical discussion and definition of sustainability, this definition of environmental integrity is a good fit for this research. However, it is worth noting that I've adapted only two of the three dimensions of performance from Bansal (2005), excluding the economic prosperity dimension. The reason is that Bansal (2005) defines economic prosperity in terms of quality of life and raising the standard of living around the world, which is only a portion of the definition of economic prosperity provided by Sheth et al. (2011) that I've chosen to use.

Finally, it's also important to investigate the role of the external environment. The dynamic capabilities perspective dictates that a firm's capabilities emerge and evolve as new markets materialize and shift. Therefore, the inclusion of a variable addressing the impact of

market characteristics is particularly important and relevant and in the following discussion, I will delineate the role of environmental turbulence in the research framework.

Moderator Variable

Given the rapid emergence of sustainability as a critical success factor for firms, one moderator variable in particular is relevant for this study: environmental turbulence. Further, the inclusion of a variable addressing the external environment ties directly to the dynamic capabilities theory, which suggests that environmental turbulence is a contextual condition that shapes a firm's ability to perform (Menguc and Auh, 2006). In the following discussion, I define this variable and elaborate on its expected impact on the processes-performance relationship in the theoretical framework.

Environmental Turbulence

The presence of environmental turbulence is posited to negatively impact the relationship between *processes* and triple bottom line performance. These markets could be characterized as 'high velocity,' "ones in which market boundaries are blurred, successful business models are unclear, and market players (i.e., buyers, suppliers, competitors, complementors) are ambiguous and shifting" (Eisenhardt and Martin, 2000, p.1111; and Eisenhardt, 1989). As firms lose the ability to rely on previously tested business models, this rate of change increases the complexity of the NPD process ultimately impacting the relationship between processes and performance.

The inclusion of a construct addressing the external environment stems directly back to the dynamic capabilities theory. The theory, which stems from the resource based view (RBV), pertains to dynamic markets that are rapidly changing. As such, Eisenhardt and Martin (2000)

define dynamic capabilities in these terms: "…Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die" (page 1107). In contrast, according to Eisenhardt and Martin (2000), the RBV breaks down in high-velocity markets, where the strategic challenge is to maintain competitive advantage when the duration of that advantage is inherently unpredictable, where time is an essential part of strategy, and the dynamic capabilities that drive competitive advantage are themselves unstable processes that are challenging to sustain. RBV often emphasizes long-term competitive advantage, which is often unrealistic in high-velocity markets. Thus, advantage in these markets is often unpredictable and short-term (p. 1118).

Hanvanich et al., (2006) distinguish between environmental turbulence and technological turbulence. The authors specify environmental turbulence as exogenous of the firm and define it as follows: "the rate of change in the composition of customers and their preferences," (p.601). Furthermore, the authors state, "In markets with a high degree of turbulence, firms tend to have new customers whose product needs are different from those of current customers. In addition, in highly turbulent markets, firms' existing customers often change their product preferences or tend to seek new products constantly," (p.601). Technological turbulence is defined as "the degree of change associated with product and process technologies" (Hanvanich et al., 2006; Glazer and Weiss, 1993; Jaworski and Kohli, 1993; Moorman and Miner, 1997). Stemming from the same concept is Moorman and Miner's (1997) definition, again separated into market turbulence and technological turbulence.

Similarly, the market for sustainability could be characterized as 'high velocity,' "one in which market boundaries are blurred, successful business models are unclear, and market players (i.e., buyers, suppliers, competitors, complementors) are ambiguous and shifting" (Eisenhardt

and Martin, 2000, p.1111; and Eisenhardt, 1989). As firms lose the ability to rely on previously tested business models, this rapid rate of change increases the complexity of the NPD process ultimately impacting the relationship between processes and performance. This again supports the need for measures to assess how the environment impacts the relationship between organizational processes and performance.

Given the preceding discussion, I define environmental turbulence as follows. Environmental turbulence consists of both market and technological turbulence. Market turbulence is defined as "the rate of change in the composition of customers and their preferences" (Moorman and Miner, 1997, p.96). Technological turbulence is defined as "the degree of change associated with new product and process technologies" (Moorman and Miner, 1997, p.96). Markets characterized as highly turbulent are ones in which "successful business models are unclear, and market players (i.e., buyers, suppliers, competitors, complementors) are ambiguous and shifting" (Eisenhardt and Martin, 2000, p.1111; and Eisenhardt, 1989).

Finally, as indicated earlier, each of these processes together with moderating variables, are positioned to impact a multi-dimensional view of performance. This multi-dimensional view of performance stems directly from the sustainability literature, which indicates that a sustainable orientation results in three particular outcomes: social, environmental, and economic performance, otherwise known as the triple bottom line (TBL). In the following discussion, I will discuss in greater detail the proposed relationships in the theoretical framework and present the research hypotheses.

CHAPTER III: RESEARCH HYPOTHESES

Based on the preceding literature review and theoretical discussion, I propose a series of hypotheses to test the relationships depicted in the model. First, as discussed earlier, I've hypothesized that *paths* precede *processes* in that "where a firm has been" shapes the firm's opportunities and the efficiency of internal processes. The seminal work of Teece et al. (1997) states the following with regard to paths: "Where a firm can go is a function of its current position and the paths ahead. Its current position is often shaped by the path it has traveled…The notion of path dependencies recognizes that 'history matters'. Bygones are rarely bygones, despite the predictions of rational actor theory. Thus a firm's previous investments and its repertoire of routines (its 'history') constrain its future behavior" (p. 522-523). This suggests that paths, in this case perceived consumer environmental concern, serves as an antecedent of organizational processes.

This relationship is particularly important as studies rarely examine what exactly drives firms to pursue these markets (Dangelico and Pujari, 2010). Additionally, Sheth et al. (2011) contend that a heightened customer focus is well justified in regard to sustainability actions as firms try to better understand how all stakeholders perceive such actions on the part of firms. Once a firm has established that a desire exists in the marketplace, learning about those stakeholder needs is a critical component of the innovation process.

An environmental and/or social concern among consumers serves as an external driver of the organization's processes. In other words, as suggested by the dynamic capabilities theory, a firm's investment in detecting market conditions, as well as the presence of a market need, dictates potential opportunities to the firm. Additionally, the market orientation literature indicates that an organization's strategic orientation (which here involves sensing the potential

market) will lead it to perform the behaviors necessary to efficiently create value for buyers (Narver and Slater, 1990). I hypothesize that firms will pursue additional information in an effort to meet the perceived needs of stakeholders, thus enhancing its new product advantage (Li and Calantone, 1998).

Additionally, as part of this strategic process, firms will discard old, inefficient behaviors to maximize effectiveness in the new product development process, thus better enabling themselves to meet the perceived needs of buyers. These needs are expressed in the customer sustainability concern variable, which signals that there is a desire in the marketplace for sustainable innovation. Before undergoing the innovation process, firms must seek knowledge in an effort to learn about this perceived desire, while unlearning old behaviors that are no longer applicable. In the context of sustainability, this suggests that the detection of a market is the primary antecedent of organizational learning and unlearning. Therefore:

> H1: Customer sustainability concern is positively related to a) organizational learning, and b) organizational unlearning.

Next, I hypothesize that, based on the dynamic capabilities literature, a firm's positions also directly impact processes. As stated by Teece et al. (1997), "…the competitive advantage of firms lies with its managerial and organizational processes, shaped by its (specific) asset position, and the paths available to it…By position we refer to its current specific endowments of technology, intellectual property, complementary assets, customer base, and its external relations with suppliers and complementors" (p. 518).

Therefore, the extent to which firms are able to complete these tasks is dependent on the relationship between positions and processes. Those three *position* variables include the presence

of a sustainable market orientation, intra-organizational trust and the influence of an internal champion.

First, I hypothesize that a firm's capacity to innovate effectively is dependent on its ability to foster a culture focused on sustainability: e.g., a sustainable market orientation. Since the seminal article by Narver and Slater (1990), it has been well established in the literature that an organization's strategic posture plays an important role in the decision to undertake the necessary behaviors to create value for buyers, and thus superior performance for the firm (Verhees and Meulenberg, 2004). More specifically, a culture focused on meeting the needs of multiple stakeholders will positively impact the firm's ability to learn about said stakeholders as well as eliminate ineffective and inefficient routines that are no longer applicable. I hypothesize that this culture, or strategic orientation, is what leads firms to gather additional market intelligence with regard to the needs of stakeholders.

Therefore based on theoretical relevance and the preceding argument, I will test for the following relationships:

> H2: Sustainable market orientation is positively related to a) organizational learning and b) organizational unlearning.

Next, I hypothesize that a second position variable, intra-organizational trust, will positively impact a firm's processes as depicted in the theoretical model. Specifically, the presence of intra-organizational trust will enhance a firm's ability to learn and unlearn, and thus effectively innovate. For example, a high level of trust embedded in an organization will positively impact organizational processes. If intra-organizational trust has a strong, positive influence on relationships within the organization, I hypothesize that it will be a powerful tool in shaping attitudes toward the learning, unlearning and innovation processes.

Consistent with the dynamic capabilities and intra-organizational trust literature, I propose that in a high-trust climate, employees will support new ideas (such as the decision to pursue sustainability projects) because of their positive expectations of one another's motives and actions (Nakata et al., 2008). Although successfully entering and then remaining competitive in these markets may seem challenging, I suggest that high levels of trust will allow employees to embrace the idea because of the mutual trust they have in one another and with their superiors.

> H3: Intra-organizational trust is positively related to a) organizational learning, and b) organizational unlearning.

I also hypothesize that the influence of a sustainability champion is likely to enhance the firm's organizational learning, unlearning and thus, innovation processes. Prior research has established the importance of champions, who "emerge informally and help projects overcome barriers to innovation" (Lichtenthaler and Ernst, 2009; Howell, et al., 2005; Markham and Griffin, 1998; Schon, 1963) as well as contribute to a culture embedded in an enterprising spirit focused on innovation and success (Tellis et al., 2009). Additionally, champions have been established as antecedents to new product development (Barczak et al., 2007) as well as having a positive impact on innovation adoption (Beath, 1991; Ettlie, et al., 1984; Grover, 1993) and as playing an important role in overcoming internal resistance and promoting innovation (Ettlie et al., 1984; Maidique and Zirger, 1984).

Since new markets may prove challenging for even the most sophisticated organizations, having an internal structure conducive to innovation can be a significant determinant to success, as highlighted in the previous literature review. Thus, I propose that the influence of a champion within the organization will mitigate the frustration that may occur when organizations incur challenges in these markets.

H4: The influence of a sustainability champion is positively related to a) organizational learning, and b) organizational unlearning.

I also hypothesize that the customer sustainability concern variable plays a moderating role in the relationship between positions and processes in that the extent to which firms sense a concern on the part of customers positively impacts organizational processes. For example, a perception of a desire on the part of customers positively impacts, or enhances, the relationship between sustainable market orientation and learning. Therefore:

H5: Customer sustainability concern strengthens the positive relationship between a) sustainable market orientation and organizational learning, and b) sustainable market orientation and organizational unlearning.

Additionally, I also hypothesize that the customer sustainability concern variable plays a moderating role in the relationship between intra-organizational trust and organizational processes. As such, the perception of a desire on the part of customers positively impacts, or enhances, the relationship between intra-organizational trust and learning as well as unlearning. Therefore:

H6: Customer sustainability concern strengthens the positive relationship between a) intra-organizational trust and organizational learning, and b) intra-organizational trust and organizational unlearning.

Finally, again, the presence of a perceived concern among customers is hypothesized to impact the relationship between positions and processes. In this case, this concern strengthens the relationship between the influence of a champion and organizational learning, organizational unlearning, and thus innovation. Therefore:

H7: Customer sustainability concern strengthens the positive relationship between a) sustainability champion influence and organizational learning, and b) sustainability champion influence and organizational unlearning.

According to Teece et al. (1997), organizational processes have three roles: coordination/integration, learning, and reconfiguration (p. 518). Consistent with this conceptualization, three processes are included in this portion of the theoretical framework: organizational learning and unlearning, which both directly impact sustainable innovation. The unlearning literature indicates that learning can sometimes occur without unlearning, that unlearning can occur without learning, and that they can occur simultaneously (Tsang and Zahra, 2008). For this reason, although the relationship is depicted as uni-directional, the relationship between learning and unlearning may also occur in either direction. Therefore, I hypothesize that the individual processes of learning and unlearning directly enhance the process of sustainable innovation. I do not, however, hypothesize that unlearning occurs without organizational learning. Developing a better understanding of the complicated relationship between learning and unlearning, and their impact on sustainable innovation, is one of the primary contributions of this study. Therefore:

H8: Organizational learning is positively related to organizational unlearning.

H9: Organizational learning is positively related to sustainable innovation.

H10: Organizational unlearning is positively related to sustainable innovation.

Finally, the seminal work on dynamic capabilities by Teece et al. (1997) suggests that a firm's capabilities explain a firm's competitive advantage: "Hence organizational processes, shaped by the firm's asset positions and molded by its evolutionary and co-evolutionary paths, explain the essence of the firm's dynamic capabilities and its competitive advantage" (p. 518).

Here, competitive advantage is conceptualized as firm performance. And, in this context, that performance is viewed as a multi-dimensional construct consisting of the triple bottom line measures of social equity, environmental integrity and economic prosperity. In other words, an organization that efficiently learns about its stakeholders, unlearns ineffective routines, and innovates effectively, will achieve superior social, environmental and economic performance. The importance of innovation is well established in the literature; it has been said that innovation is at the core of dynamic organizational capabilities (Gatignon et al., 2002; Teece and Pisano, 1994; Nelson, 1995); however, Gatignon et al. (2002) indicate much empirical confusion still exists on the topic. Additionally, triple bottom line performance, and its drivers, is also not well understood in the literature. Therefore, a better understanding about how innovation impacts performance, particularly triple bottom line performance, is needed. Therefore:

> H11: Sustainable innovation is positively related to triple bottom line performance.

Finally, the dynamic capabilities work by Eisenhardt and Martin (2000) proposes the addition of a boundary condition: markets characterized as high velocity (p. 1106). The authors state "RBV breaks down in high velocity markets, where the strategic challenge is maintaining competitive advantage when the duration of that advantage is inherently unpredictable, where time is an essential aspect of strategy, and the dynamic capabilities that drive competitive advantage are themselves unstable processes to sustain" (p. 1106). Additionally, Eisenhardt (1989) noted that high-velocity (turbulent) environments are "particularly challenging because information is poor, mistakes are costly, and recovery from missed opportunities is difficult" (page 570). Thus, the literature indicates that turbulence has a dampening effect on performance. Given this suggested boundary condition, I've proposed an empirical test of the impact of

environmental turbulence on the relationship between innovation and firm performance. Developing a better understanding of how rapidly changing preferences and technologies inherent in turbulent markets can impede the relationship between innovation and performance is another contribution of this study, one that I believe hasn't yet been tested empirically. Therefore:

> H12: Environmental turbulence weakens, or moderates, the relationship between sustainable innovation and triple bottom line performance.

In the following chapter, I discuss how I've measured each of these constructs as well as the procedure for data collection.

CHAPTER IV: RESEARCH METHODOLOGY

The following discussion details the methodology by which data for this dissertation was collected. Following the methodology discussion is an explanation of the construction and adaptation of the constructs measured in this research.

Data Collection

To test the proposed framework, data collection took place in three phases. In the first stage, I carried out a small pre-test of the survey instrument to assess its clarity, structure, length, and ease of use. Eighteen business associates in my personal network were recruited to participate. Specifically, they were asked to complete the two-part survey online, and then I followed up by interviewing them with questions regarding the content, length and wording of the questions and answers. Based on the feedback, the survey instrument was revised before use in the actual or final test, a survey of members of various opt-in sustainable innovation-related groups on LinkedIn.

This second phase of data collection consisted of two steps. First, members were asked to participate in the research by receiving a recruitment message from various LinkedIn group owners. In addition to asking members to participate in this important research, the email included a statement that participants would be entered into a raffle for one of two $150 gift cards. After completion of Part I—a short survey consisting of demographic questions—the researcher then emailed a weblink to Part II of the survey directly to respondents, typically on the same day. The second survey included many of the same demographic questions in addition to the full measurement scales. The intention was to measure for non-response bias and assess

whether the group members who completed Part I were similar to the group members who completed Part II. Please refer to Appendix 2 for both survey instruments.

Phase One: Interviews and Test of the Survey Instrument

This first stage, a pre-test of the survey instrument, consisted of two short in-person interviews each with 16 businesspeople, including one retired professor, followed by their taking the survey. This served as a method of understanding whether the measures in this study were concise and coherent, and resulted in a number of adjustments, most of which were focused on shortening and clarifying questions. This also served as a way to check the face validity of the measures. None of the changes resulted in adjustments to the content of the measurement scales. Interviewees were enlisted to participate via the researcher's network of business associates.

Each session took approximately one hour. It began with a brief description of the task, completion of Part I of the survey then a short discussion, followed by Part II of the survey and finally a more thorough discussion of the respondent's experience. Feedback during this stage indicated that the length of the survey was reasonable, with none of the participants taking longer than twenty minutes to complete Part 2. All of the questions were understandable and participants indicated that the wording was mostly favorable. In a number of cases, shortening the questions was possible. This was the primary feedback received throughout this stage of the research.

Phase Two: Empirical Data – Survey Part I

Respondents to Part I of the survey were primarily recruited through their membership in a LinkedIn Group called Sustainability Professionals. The owner of the group sent an email to

approximately 36,500 members and a follow up reminder to approximately 39,000 members two weeks later (please refer to Appendix 1 for each of these messages). Of those members, 888 clicked on the survey and 235 fully completed it. Two other groups also emailed group members with this survey as the primary message. One group was Green & Sustainability Innovators with approximately 19,000 recipients of the email and the other was Green Jobs & Career Network, with approximately 45,000 members. Six members of the former group and 21 members of the latter group completed the survey.

Additionally, a network of groups owned by the same organization also promoted the survey on their blog with an email link to approximately 45,000 members, resulting in four completed surveys (please refer to Appendix 1c for the blog message). The Greenbiz group owner tweeted a link to the survey via Twitter to approximately 30,000 followers resulting in four completed surveys. Finally, a few individuals passed the survey on to their personal network of sustainability professionals, resulting in two additional completed surveys. A summary of these figures is in Table I below.

TABLE I: PART I SURVEY RESPONSE RATE

Source	Number of LinkedIn Group Members	Number Clicked on Part I Survey	Number Completed Part I	% Completed Part I that Clicked Part I
Email to Green & Sustainability Innovators LinkedIn Group	~19,000	8	6	75%
Email to MojaLink LinkedIn Group and Network	~45,000	25	4	16%
Email to Sustainable Business LinkedIn Group	36,500 & 39,000	888	235	26%
Email to Green Jobs and Career Network Group (as part of Group Newsletter)	45,000	124	21	17%
Emailed to Colleagues by Respondents (snowball)	<20	7	2	29%
Tweet by the owners of the GreenBiz LinkedIn Group	30,000	11	4	36%
TOTAL		1,063	272	26%

In addition to basic demographic questions, Part I of the survey included qualifying questions to ensure respondents were in job positions related to innovation, such as in the product development, marketing, or senior management departments within their organization. Many of the respondents that didn't complete the survey were dismissed after answering no to either these questions, which are:

> Please consider the following definition of sustainable innovation when answering questions in this survey. **Sustainable innovation** is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity. The innovation can be a new or improved product or service, or a new or improved process anywhere in the business, such as in manufacturing, distribution, or the supply chain.
>
> - Has your SBU created a sustainable innovation in the last five (5) years?

- Have you ever been directly involved in a sustainable innovation project or program in your SBU?

Part I of the survey ended by asking respondents to provide their email address to receive Part II of the survey. The email message sent to respondents appears in Appendix 1d.

Phase Three: Empirical Data – Survey Part II

Upon completion of Part I, survey respondents were emailed a short message including a weblink to the full survey by the researcher. This recruitment message, as well as the follow-up message, are shown in Appendix 1. Of those emailed, 168, or 62%, completed Part II of the survey. Response rates and completion rates are available in Table II below.

TABLE II: EMAIL RESPONSE RATES AND COMPLETION RATES

Source	**Number Emailed Part II Survey**	**Number Clicked on Part II Survey**	**Number Completed Part II Survey**	**Response Rate to Part II Email**
Innovation Group	6	5	4	67%
MojaLink Group	4	3	1	25%
Sustainable Business Group	235	200	148	63%
Green Jobs and Career Network Group	21	14	12	57%
Emailed from Respondents	2	1	1	50%
GreenBiz Tweet	4	2	2	50%
Total	**272**	**225**	**168**	**62%**

Upon data cleanup, a small number of responses were discovered to have very minor amounts of missing data. However, due to the relatively small sample size, these surveys were

kept and their missing values were filled in utilizing the mean replacement function on SPSS. Details of these missing values are as follows:

- Eight respondents exited the survey after completing all questions related to the conceptual model – all scale items were complete and only demographic and market orientation (a control variable) measures are missing. These eight were excluded from the Goodness of Fit analysis between Part I and Part II.
- Four respondents left out a few answers to certain measures but otherwise completed the survey. Missing data was minimal.

The final sample size used in the analysis was 168. The sample was predominately male (58%) and the majority of the respondents had a college (34%) or master's degree (44%). In almost 60% of the cases, respondents were answering on behalf of an entire business rather than an SBU and 57% worked for companies with 100 or fewer employees. Finally, 73% worked for privately held companies. Please refer to Table III for a summary of the characteristics of the sample.

TABLE III: DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

Survey Question	**Response**	**Number of Respondents**	**% of Respondents**
Are you answering on behalf of an SBU or an entire business?	SBU, because my division is one of several businesses within a larger firm.	69	41%
	Business, because my firm has only one business unit.	99	59%
In what areas has your SBU created sustainable innovations?	Manufacturing	53	32%
	Marketing	40	24%
	Management	31	19%
	Services	108	64%
	Supply Chain	53	32%
	Products	86	51%
What is your role in your SBU's sustainable innovation program?	Overseeing executive or manager	83	49%
	Team member	49	29%
What is your primary function in your SBU?	Marketing	12	7%
	IT	4	2%
	Manufacturing	2	1%
	Product Development	18	11%
	Procurement	2	1%
	Finance	2	1%
	Sales	16	10%
	General Management	43	26%
	Operations	25	15%
	Business Development	24	14%
	Other	47	28%
Is your company publicly traded	Yes	37	22%
	No	123	73%
How many employees does your company employ?	100 or fewer	96	57%
	Between 100-500	15	9%
	Greater than 500	37	22%

What primary industry is your SBU in?	Agriculture, Forestry, and Fishing	2	1%
	Mining	1	1%
	Construction	16	10%
	Manufacturing	32	19%
	Transportation, Communications, Electric, Gas, and Sanitary Services	11	7%
	Wholesale Trade	2	1%
	Retail Trade	5	3%
	Finance, Insurance, and Real Estate	5	3%
	Services	29	17%
	Public Administration	2	1%
	Other	53	32%
What is the level of the position you hold?	Staff	39	23%
	Manager	45	27%
	Director	22	13%
	Senior Management	13	8%
	Owner/CEO	40	24%
What is your gender	Male	98	58%
	Female	55	33%
What is the highest level of education you've completed?	High School	3	2%
	Some College	12	7%
	College Degree	57	34%
	Master's Degree	74	44%
	Professional Degree	6	4%
	PhD	6	4%

Measures

Two of the constructs were measured with adopted measures (no changes to existing items), two constructs were measured with adapted measures, and five were measured with completely new measures. When possible, constructs were measured utilizing existing scales. In some cases, however, scales had to be adapted to fit this study. And, in the case of the customer sustainability concern, sustainable market orientation, organizational unlearning, sustainable

innovation, and triple bottom line performance constructs, completely new scales were developed, proposed, and tested based on the extant literature and theory.

Scales used in their existing state, without any significant alterations include: intra-organizational trust (Nakata, Zhu and Kraimer, 2008); environmental turbulence (Moorman and Miner, 1997); and organizational learning (Zhou et al., 2005)[1]. The sustainability champion influence (Chandy and Tellis, 1998) constructs was adapted to fit the context of this study. Each of the scales utilized in this research are detailed in the following discussion.

Customer Sustainability Concern

Customer sustainability concern was defined earlier as a firm's awareness of customers' desire for products and services that are environmentally and socially conscious. Previously, Diamantopoulos et al. (2003) tested a similar concept of environmental consciousness that contained three dimensions: (i) knowledge about green issues, (ii) attitudes towards environmental quality, and (iii) environmentally sensitive behavior. The authors combined these dimensions with six socio-demographic variables (gender, marital status, age, number of children, education and social class) to understand how environmental consciousness is impacted by socio-demographic status. The environmental consciousness scale was previously tested and validated (Bohlen et al., 1993); however, mixed support was found for its relationship with demographic variables (in the 2003 findings). For the purposes of this research, this scale could not be used as it was previously. The original scale inspired the one used in this research but the newly created version is significantly different from the prior version.

[1] Market orientation was also measured utilizing the scale items by Narver and Slater (1990) to use as a control variable and/or for future analysis.

First, the scale measures customer preferences. This new scale measures firm *perceptions* of target customer preferences, based on the notion that a perceived demand by customers for a firm to be responsive to environmental and social needs will serve as a strong driver of sustainable innovation. Second, the original scale measures knowledge, attitudes and behaviors related to "green" issues. This was expanded to address the other two dimensions of sustainability: financial and social impacts. Third, the original scale was titled "environmental consciousness". Based on the adaptation and considerable broadening of the original measure, the measure is now referred to as "customer sustainability concern". Finally, the scale was devised in 1993 for use in the UK and included 46 items. To achieve parsimony, this original scale could not be used in that state. Therefore, the new scale was significantly shorter, consisting of ten items. The scale items are listed in Table IV below.

TABLE IV: CUSTOMER SUSTAINABILITY CONCERN SCALE

New Scale Items: Customer Sustainability Concern
To what extent do your SBU's targeted customers believe each of the following (7-point Likert scale, strongly disagree-strongly agree):
Preservation of the environment is one of the most important issues facing society today
Firms can be profitable while addressing environmental issues
How often do your SBU's targeted customers engage in the following activities (5-point Likert scale, never-always)?
Choose the environmentally friendly alternative product or service if one of similar price is available
Choose the environmentally friendly alternative product or service regardless of price
Investigate the environmental effects of products or services prior to purchase
To what extent do your SBU's targeted customers believe the following (7-point Likert scale, strongly disagree-strongly agree):
Social equity is one of the most important issues facing society today
Firms can be profitable while addressing social issues such as engaging in fair labor practices and helping the community
How often do your SBU's targeted customers engage in the following activities (5-point Likert scale, never-always)?
Choose the socially friendly alternative product or service if one of similar price is available
Choose the socially friendly alternative product or service regardless of price
Try to discover the social effects of products and services prior to purchase

Sustainable Market Orientation

Narver and Slater (1990) developed a multi-item scale to test each of the five dimensions of a market orientation (customer orientation, competitor orientation, interfunctional

coordination, profit orientation, and long-term focus). Although their study did not offer support for the two decision criteria (long term focus and profit orientation), it did find support for existence of the three components. Due to the long-term general acceptance of these measures, I've measured them in their original form, as a control variable in this model.

However, in addition to these measures, I've also separately measured sustainable market orientation based on the earlier definition of sustainable market orientation. Recall that sustainable market orientation is defined as: the strategic alignment of the market-oriented needs of customers with the environmental, social and economic interests of other stakeholders. Given this definition, I've created a new scale with the following items listed in Table V.

TABLE V: SUSTAINABLE MARKET ORIENTATION SCALE ITEMS

New Scale Items: Sustainable Market Orientation
In our SBU, we consider and balance what our customers need with the…
Environmental concerns of other stakeholders (such as shareholders, governments, the public)
Social concerns of other stakeholders
Economic concerns of other stakeholders
In our SBU, we strive to meet the needs of our customers while considering the…
Environmental concerns of other stakeholders (such as shareholders, governments, the public)
Social concerns of other stakeholders
Economic concerns of other stakeholders

All items measured on a seven-point Likert scale, strongly disagree-strongly agree.

Intra-Organizational Trust

Earlier, intra-organizational trust was defined as: the positive expectations that workers across organizations have about one another's abilities, actions and motives (Huff and Kelley, 2003). It is said to consist of cognitive, affective, and moral dimensions, and describes the perceived intent and behaviors of organizational members (Chowdhury, 2005; Hosmer, 1995; McAllister, 1995; Nakata et al., 2008, page 489). Nakata et al. (2008) developed scale items that were used verbatim for this study. Table VI includes each item.

TABLE VI: INTRA-ORGANIZATIONAL TRUST SCALE ITEMS

Existing Scale Items: Intra-Organizational Trust
Employees throughout this SBU…
Are competent at their jobs.
Uphold professional work values.
Are skilled and knowledgeable to do their work.
Really care and are concerned for each other.
Are close enough to freely share ideas, thoughts, and feelings.
Invest emotionally in their work relationships.
Enjoy and like one another.
Do what is right rather than expedient.
Deal with each other fairly and justly.
Treat one another with dignity and respect.

All items measured on a seven-point Likert scale, strongly disagree-strongly agree

Sustainability Champion Influence

As stated earlier, a champion undertakes three key activities: 1) during development, he or she adopts the innovation in a personal way, 2) he or she contributes to the development of the innovation by promoting it internally during the development process, and 3) he or she "sponsors" the innovation by incurring risk by visibly advocating for the project, overcoming opposition, and enlisting greater support (Markham, 1998, p. 495). This construct was measured by slightly adapting the scale measures developed by Chandy and Tellis (1998) and both sets of measures are as follows:

TABLE VII: ORIGINAL AND ADAPTED SUSTAINABILITY CHAMPION INFLUENCE SCALE ITEMS

Original Scale Items: Champion	**Adapted Scale Items: Sustainable Champion Influence**
Product champions play an important role in this SBU.	In your SBU, how important a role do the following individuals play in sustainable innovation… (5-point Likert Scale, not at all important-extremely important)
Senior managers in this SBU strongly support champions of radical product ideas.	Product managers Senior managers Champions
Activities of product champions have a clear impact on product development in this SBU	To what extent do you agree or disagree with the following statements: (7-point Likert Scale, strongly disagree-strongly agree)
Top managers in this SBU are frequently the most ardent champions of radical product ideas.	Top managers in our SBU are frequently the most ardent champions of ideas related to sustainable innovation.
Product champions wield considerable clout in this SBU.	Product champions wield considerable clout in our SBU.

Organizational Learning

Recall that organizational learning was earlier defined as: the development of new knowledge or insights that facilitate performance-enhancing organizational changes (Zhou et al., 2005; Sinkula, 1994; Slater and Narver, 1995). Further, the organizational learning process is said to include four stages: information acquisition, information dissemination, shared interpretation, and organizational memory (Zhou et al., 2005; Slater and Narver, 1995). To test this construct, and maintain the theoretical structure of this construct, I've employed the measurement scale developed by Zhou et al. (2005). Very little was done to adapt the measures

other than to change the context of the question to address sustainability issues. Original and adapted measures are listed in Table VIII.

TABLE VIII: ORIGINAL AND ADAPTED ORGANIZATIONAL LEARNING SCALE ITEMS

Original Scale Items: Organizational Learning	**Adapted Scale Items: Organizational Learning**
Information Acquisition:	Information Acquisition:
We often visit other companies to improve our knowledge of production, marketing, and management	When working on a sustainability innovation program, we in the SBU... visit other companies to improve our knowledge of sustainability
We often attend all sorts of expert presentations to improve our knowledge of production, marketing and management.	attend all sorts of expert presentations to improve our knowledge of sustainability.
We often attend training programs to improve our knowledge of production, marketing and management.	attend training programs to improve our knowledge of sustainability.
Information Dissemination:	
We often exchange ideas on learned knowledge to improve our knowledge of production, marketing, and management.	When working on a sustainability innovation program, we in the SBU... exchange newly acquired information with one another to improve our knowledge of sustainability.
Our employees often share the learned knowledge with top managers.	share newly acquired information about sustainability with top managers.
Shared Interpretation:	
We encourage teamwork, team decision making, and internal communication.	When working on a sustainability innovation program, we in the SBU... encourage teamwork, team decision making, and internal communication
We are good at resolving conflicts among the staff.	resolve conflicts with one another
Organizational Memory:	
We have extensive knowledge or and experience in developing new products.	In our SBU we accumulate extensive knowledge of, and experience in,… developing new sustainable products
We have expensive experience in formulating new production processes.	formulating new sustainable processes

All items measured on a 5-point Likert scale, never-always

Organizational Unlearning

As stated earlier, the definition of organizational unlearning is "the discarding of organizational information or routines and/or individual habits or beliefs". Components of this conceptualization include:

- The discarding of information, routines, habits or beliefs is done without a value judgment
- The discarding does not always coincide with the generation of new knowledge, routines, habits and beliefs.
- Organizational unlearning requires unlearning by individuals.
- May coincide with changes in personnel.
- May or may not be planned or predictable.
- More difficult for firms without a clear strategic vision.

Based on this conceptualization, I created and subsequently tested scale items to assess these concepts. The resulting items are listed in Table IX.

TABLE IX: ORGANIZATIONAL UNLEARNING SCALE ITEMS

New Scale Items: Organizational Unlearning
When working on a sustainable innovation program, we in the SBU...
assess our knowledge and routines to determine if they are relevant.
evaluate our knowledge and routines to see if they are useful.
discard existing knowledge and routines that do not apply.
are willing to set aside old ways of doing things.
When working on a sustainable innovation program, individuals in our SBU...
find that old habits are so difficult to break that it sometimes requires a change in personnel to achieve.
are willing to set aside the old way of doing business to adapt.
evaluate their own knowledge and routines to see if they are useful.
discard their own existing knowledge and routines that do not apply.

All items measured on a 7-point Likert scale, strongly disagree-strongly agree.

Sustainable Innovation

Recall from the previous discussion and literature review that sustainable innovation is defined as: the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity. The innovation can be a new or improved product or service, or a new or improved process anywhere in the business, such as in manufacturing, distribution, or the supply chain.

Based on the preceding definition, a new measure was created using the scale items listed in Table X below. Additionally, prior to answering questions referring

specifically to the term "sustainable innovation," respondents were given the definition of the term.

TABLE X: SUSTAINABLE INNOVATION SCALE ITEMS

New Scale Items: Sustainable Innovation
Sustainable innovation is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity. The innovation can be a new or improved product or service, or a new or improved process anywhere in the business, such as in manufacturing, distribution, or the supply chain.
To what extent do you agree or disagree with the following statements:
Over the past two years, our SBU has done a good job generating sustainable innovation processes
Over the past two years, our SBU has done a good job designing sustainable innovation processes
Over the past two years, our SBU has done a good job implementing sustainable innovation processes
Over the past two years, our SBU has done a good job generating sustainable innovation products and services
Over the past two years, our SBU has done a good job accepting sustainable innovation products and services
Over the past two years, our SBU has done a good job implementing sustainable innovation products and services

All items measured on a 7-point Likert scale, strongly disagree-strongly agree

Performance

Recall that triple bottom line performance is defined as multi-dimensional performance consisting of measures of economic prosperity, social equity, and environmental integrity, otherwise known as the Triple Bottom Line. In order to assess

economic performance, firm (SBU) performance was measured adapting measures in Zhou et al., (2005). The authors asked respondents to assess their firm's sales growth, return on investment, and profit level relative to that of their major competitors (p. 49). In addition to measuring SBU performance, the authors measured product performance as well by asking managers to assess the product quality and value to customers relative to competing products (Zhou et al., 2005, p. 49: adapted from Gatignon and Xuereb, 1997).

Finally, in order to assess *environmental integrity and social equity*, I've utilized and adapted the scale developed by Bansal (2005). However, the original scale was used to indicate presence/absence of environmental integrity and social equity by reviewing company annual reports. For the purposes of this research, I've converted each item to a Likert scale and rephrased the questions accordingly, without sacrificing the content.

The items were measured in two ways: first, one set of measures was phrased relative to competitors. A similar set of measures was relative to expectations. Both were evaluated in the exploratory phase of this research to determine the better fit. Both sets of measures are available in Tables XI and XII.

TABLE XI: TRIPLE BOTTOM LINE PERFORMANCE (RELATIVE TO COMPETITORS) SCALE ITEMS

New Scale Items: Triple Bottom Line Performance (Relative to Competitors)
Please compare your entire organization's financial performance over the last two years relative to your closest competitors, in terms of…
Return on Investment
Profitability
Market Share
Sales
Customer Satisfaction
Please compare your entire organization's environmental performance over the last two years relative to your closest competitors, in terms of…
Providing products or services that have a less environmentally harmful impact than in previous years
Providing products or services with less environmentally damaging inputs than in previous years
Reducing or eliminating environmentally harmful processes
Please compare your entire organization's social performance over the last two years relative to your closest competitors, in terms of enhancing…
Employee well-being, health, and safety
Community well-being, health and safety
The well-being of disenfranchised, or less fortunate, members of the community
Access to resources and opportunities for all members of the community

All items measured on a 7-point Likert scale, much worse-much better

TABLE XII: TRIPLE BOTTOM LINE PERFORMANCE (RELATIVE TO EXPECTATIONS) SCALE ITEMS

New Scale Items: Triple Bottom Line Performance (Relative to Expectations)
If you consider your SBU's sustainable innovation efforts over the past two years as a program, how would you describe your program's outcomes relative to your expectations?
Return on Investment
Profitability
Sales
Customer Satisfaction
Product or Service Quality
Providing products or services that have a less environmentally harmful impact than in previous years
Providing products or services with less environmentally inputs than in previous years
Impact on employee well-being, health and safety
Impact on the well-being of disenfranchised or less fortunate, members of the community
Reduction or elimination of environmentally harmful processes
Impact on community well-being, health, and safety
All items measured on a 7-point Likert scale, much worse-much better

Environmental Turbulence

Environmental turbulence consists of both market and technological turbulence. Market turbulence is defined as "the rate of change in the composition of customers and their preferences" (Moorman and Miner, 1997, p.96). Technological turbulence is defined as "the degree of change associated with new product and process technologies" (Moorman and Miner, 1997, p.96). Markets characterized as highly turbulent are ones in which "successful business models are unclear, and market players (i.e., buyers, suppliers, competitors, complementors) are

ambiguous and shifting" (Eisenhardt and Martin, 2000, p.1111; and Eisenhardt, 1989). To measure this construct, scales items were used verbatim from Moorman and Miner (1997).

TABLE XIII: ENVIRONMENTAL TURBULENCE SCALE ITEMS

Existing Scale Items: Environmental Turbulence
To what extent do you agree or disagree with the following statements about the role of technology?
The technology in our business is changing rapidly.
Technological changes provide big opportunities in our business.
A large number of new product ideas in our business have been made possible through technological breakthroughs.
Technological developments in our business are rather minor.
To what extent do you agree or disagree with the following statements about your customers?
In our kind of business, customers' product preferences change quite a bit over time.
Our customers tend to look for new products all the time.
We are witnessing demand for our products and services from customers who never bought them before.
New customers tend to have product-related needs that are different from those of our existing customers.
We cater to much the same customers that we used to in the past.
It is very difficult to forecast where the technology in our business will be in the next five years.
All items measured on a 7-point Likert scale, strongly disagree-strongly agree

Control Variables

Finally, a number of control variables were measured to test for various types of bias. Included in this portion of the survey instrument were (traditional) market orientation, firm

industry, firm size (in terms of revenues and number of employees), location, age (of the firm), respondent's title or function area, time with the firm, age, gender and education.

The following section discusses the analysis of the empirical data, beginning with tests for non-response bias, followed by exploratory factor analyses and the measurement model, and finally tests of the hypotheses and findings in regard to the relationships delineated in the theoretical framework.

CHAPTER FIVE: ANALYSIS AND RESULTS

Analysis occurred through several steps. The first step was to perform a non-response bias test to assess whether respondents to Part I and respondents to Part II were different from one another. The second step was to confirm the measurement model. This was done through an exploratory factor analysis (EFA) using SPSS, followed by a confirmatory factory analysis (CFA) in AMOS. Next, common method variance testing was performed to determine what bias, if any, occurred through common methods. The fourth step was testing the structural model or hypotheses through PLS, using SmartPLS. Each of these steps are now described, along with results of the analysis.

Non-Response Bias Assessment

To ensure the absence of non-response bias, a Chi-Square Goodness of Fit test was conducted to compare the demographics of Part I respondents with Part II respondents. Part I of the survey essentially formed the sampling frame for the survey, whereas Part II provided the actual sample. A strong survey would have little to no indication of a bias in who responded to the survey based on general characteristics of the sampling frame. The chi square test was chosen because the demographic variables in the study are categorical rather than interval. In all analyses, the Chi Square statistic was non-significant, suggesting non-response bias was not a likely issue. This test was conducted on six variables: 1) respondent's gender, 2) public vs. private companies, 3) respondent's education, 4) role within the organization, 5) role within the innovation project, and 6) whether the organization is an SBU or not.

The analysis conducted to assess whether the sampling frame differed from the ending or response sample in regard to gender failed to indicate a significant difference with χ^2 (1) = .536,

p = .464. Similarly, the same test was used to determine potential response bias in regard to whether or not the company was public or private. The test failed to indicate significant differences between the two groups, again suggesting response bias was unlikely in the data, with χ^2 (1) = .395, p = .530. Next the analysis was conducted based on education of the respondent, with similar results: χ^2 (6) = 1.293, p = .972. The analysis to compare role within the organization (e.g., marketing, IT, management, procurement, finance, manufacturing, operations, NPD) was non-significant with χ^2 (10) = 8.806, p = .551, again indicating response bias was not likely within the data. Similarly, the respondents role within their firm's innovation project also is not different between groups: χ^2 (2) = 2.993, p = .224. Finally, the analysis to determine differences between the two groups based on whether the data was based on an SBU or an entire business suggest no group differences exist: χ^2 (1) = 1.533, p = .216.

Thus, one can conclude based on this series of Chi-Square Goodness of Fit tests that those who completed Part I of the survey are quite similar to those who completed Part II of the survey, reducing the probability of response bias.

Measurement Model

Exploratory Factor Analysis (EFA)

An EFA was performed in SPSS to verify the factor structure, using principle component analysis. In all cases, the analysis was set to only retain factors with an eigenvalue greater than 1.0. Additionally, when the analysis resulted in more than one component, the factor solution was rotated with the Varimax procedure to maximize the variance. Initially, the items were tested together. However, due to the size of the model and large number of constructs, the constructs needed to be tested in smaller batches based on their conceptual structure. The four independent

variables were tested separately from the rest of the model, and the findings for each of the constructs are listed below.

Confirmatory Factor Analysis (CFA)

Secondly, due to the size of the theoretical framework, two measurement models were tested in AMOS to verify the hypothesized structure of the constructs. At that point, poorly loading variables ($\lambda < .6$) and items that were cross-loading onto other latent constructs were removed.

The first CFA tested the independent variables in the framework: customer sustainability concern, sustainability champion influence, sustainable market orientation, and intra-organizational trust. The model was a good fit with: chi-square = 552.180, d.f. = 314, $p < .001$; CFI = .922; NFI = .838; RMSEA = .068.

The second CFA tested the mediator, moderator, and dependent variables: environmental turbulence, organizational learning, organizational unlearning, sustainable innovation and triple bottom line performance. This model was also a good fit with the following indices: chi-square = 1106.799, d.f. = 648, $p < .001$; CFI = .910; NFI = .809; RMSEA = .066.

After a suitable fit was determined for both models, reliability analyses were used to determine reliability of the reflective measures, which were sustainability champion influence, sustainable market orientation, and organizational unlearning. To test for reliability of the first-order constructs, a Cronbach's alpha test was conducted with acceptable fit determined if $\alpha > .7$ (Nunnally, 1978). Formative measures were intra-organizational trust, customer sustainability concern, organizational learning, environmental turbulence, sustainable innovation, and triple bottom line performance.

Additionally, to test for validity and reliability, the composite reliability (CR), average variance extracted (AVE), maximum shared squared variance (MSV), and average shared squared variance (ASV) were generated for each of the latent variables. These calculations for the latent constructs in both of the measurement models is available in Appendix 4, Tables XXXVI and XXXVIII.

Next, to assess discriminant validity as a final step in measurement model assessment, I evaluated the constructs via the method suggested by Fornell and Larcker (1981), which is to calculate the AVE for each latent variable and compare it with the correlations between all pairs of constructs in the measurement model. These tables (one for each of the two measurement models) are available in Appendix 4, Tables XXXVII and XXXIX. Upon inspection, it appears that convergent validity may be a problem for the sustainability champion influence construct (AVE = .450).

The above measurement testing results for each of the constructs is now reported.

Customer Sustainability Concern (CSC)

The structure of the customer sustainability concern construct was believed to be multi-dimensional, because of the complexity of the construct (e.g., Diamantopoulos et al., 2003). Although, as stated earlier, Diamantopoulos et al. (2003) measured knowledge, attitudes and behaviors, this study specifically measured the presence of attitudes and behaviors based on the theoretical development of the construct. Therefore, the items were crafted to capture consumer attitudes and behaviors on social and environmental dimensions, and the EFA confirmed this structure. The EFA determined, as predicted, that CSC consisted of multiple components. The analysis was set up to extract all factors with an eigenvalue greater than 1.0 and resulted in a

three-component structure (please refer to Appendix 3, Table XVIII for the full results). The three dimensions are focused on a) behaviors, b) environmental attitudes and c) social attitudes.

In the subsequent CFA, the findings from the exploratory factor analysis were confirmed with one exception: one item was removed due to its low factor score or cross-loading. This item was: “how often do your SBU’s targeted customers engage in the following activities: choose the environmentally friendly alternative product or service regardless of price”. Removal of this item did not impact the scale’s usefulness or meaning since a similar question focused on pricing remained: “how often do your SBU’s targeted customers engage in the following activities: choose the environmentally friendly alternative product or service if one of similar price is available”. Additionally, the poor performance of this measure may have been due to the presence of two similarly phrased questions that could have confused respondents.

To understand whether CSC is a second-order construct consisting of the three dimensions – once the above item was removed – the CFA was done again with a second-order factor using the first-order factor loadings. The CFA confirmed this. The CFA model confirmed a second-order factor or measure consisting of eight items. The final second-order construct consisted of three dimensions: one component consisting of two items, and two components consisting of three items.

The factor loading scores from the confirmatory factor analyses are available in Appendix 3: Table XIX. The data support the discriminant validity of the construct with the square root of AVE exceeded the correlation of all pairs of constructs (please refer to Appendix 4, Tables XXXVI and XXXVII for the validity indices).

Sustainable Market Orientation (SMO)

The hypothesized structure of the sustainable market orientation construct was first explored with a principle component analysis that yielded a one-component factor solution with all factor loadings greater than .7 (please refer to Appendix 3, Table XX for the findings). Next, the construct was tested in the confirmatory factor analysis and two items were removed due to cross-loading and poor fit. They are: 1) "In our SBU, we strive to meet the needs of our customers while considering the…environmental needs of other stakeholders (such as shareholders, governments, the public)" and 2) "In our SBU, we strive to meet the needs of our customers while considering the…economic needs of other stakeholders". The result after the removed items was an acceptable fit with the remaining four items.

Similar to the CSC construct, these removed items may have performed poorly due to their similarity to the phrasing of other items in the measurement scale. Although the survey questions were split into two separate sections of the survey (because of their similarity), respondents may have been confused by their similarity. The subsequent removal of these items did not impact the effectiveness of the scale and the remaining items still measured how each the dimensions of the TBL (social impact, environmental impact, and economic impact) were balanced with a stakeholder orientation.

The reliability of the final SMO construct was tested and found to be sufficient with α = .885. The factor loadings from the confirmatory factor analysis are available in Appendix 3, Table XXI. The validity findings are available in Appendix 4, Tables XXXVI and XXXVII.

Intra-Organizational Trust (Trust)

In previous studies, and as suggested by the extant literature, the intra-organizational trust construct is considered multi-dimensional. This hypothesized structure was tested, and confirmed, with a principle component analysis that yielded a two-component solution (please refer to Appendix 3: Table XXII for the EFA findings).

This two-factor structure was also confirmed by the CFA, which indicated the model required a second order construct. This model produced an acceptable goodness of fit and all ten of the measurement items were retained.

Please refer to Appendix 3, Table XXIII for the CFA factor scores. Please also refer to Appendix 4, Tables XXXVI and XXXVII for the validity statistics.

Sustainability Champion Influence (Champ)

The scale items for the sustainability champion influence construct were first tested with a principle component analysis. The analysis yielded a one-component solution, which was then confirmed with the CFA. All five measurement items were retained and the indicators for the measurement model were acceptable, as previously reported.

Finally, the Champ construct was found to be reliable with $\alpha = .783$. Please refer to Appendix 3, Tables XXIV and XXV for all analyses related to this construct. Please also refer to Appendix 4, Tables XXXVI and XXXVII for the reliability and validity findings.

Organizational Learning (Learning)

Based on the theoretical development, organizational learning was expected to be a multi-dimensional construct. Recall that it is said to consist of four dimensions including: information acquisition, information dissemination, shared interpretation, and organizational memory. This construct was first tested, and its structure was confirmed, with the principle component analysis, which yielded a two-component solution. As expected, one of the two factors clustered questions on information acquisition. The second component included scale items on the other dimensions, which primarily focus on information dissemination.

The findings from the principle component analysis were confirmed by CFA, at which point I created a second order construct. The measurement model consisted of two constructs—one consisting of three items (information acquisition) and another consisting of six items (information dissemination). That model yielded acceptable fit indices, as reported earlier.

The findings from the analysis are available in Appendix 3, Tables XXVI and XXVII as well as Appendix 4, Tables XXXVIII and XXXIX (for the validity) measures.

Organizational Unlearning (Unlearning)

The hypothesized structure of the organizational unlearning construct was first tested with an exploratory analysis, which indicated that all but one of the scale items loaded onto one factor, while one item loaded separately onto another factor. This suggested that further analysis of this particular scale item was needed in the confirmatory factor analysis stage of this research.

The CFA indicated that this item was cross loading onto other variables and it was subsequently removed, yielding a single construct for organizational unlearning. The item removed was: “When working on a sustainable innovation program, individuals in our

SBU...find that old habits are so difficult to break that it sometimes requires a change in personnel to achieve". This item may not have performed well due to its negative connotation. While other unlearning scale items were phrased positively (e.g., "when working on a sustainable innovation program, we in the SBU…evaluate our knowledge and routines to see if they are useful"), the negative phrasing of this question could have prevented respondents from answering it honestly. According to Podsakoff (2003) a measurement item's social desirability may impact respondents' self report of certain behaviors. Thomas and Kilmann (1975) and Nederhof (1985) report that there is a tendency for respondents to behave in a culturally acceptable and appropriate manner, and that this may be reflected in the items of a questionnaire. This question may have been perceived as an "undesirable" behavior by respondents, which may have impacted its performance in the scale as a whole. An alternative explanation for the poor performance of this item is that respondents' organizations may not take this drastic of a step to "unlearn" old routines; thus suggesting that undertaking changes in personnel is simply too radical of an event for this type of organizational process.

The final scale consists of seven measurement items. The scale was reliable with α = .901. Please refer to Appendix 3, Tables XXVIII and XXIX for all measures related to unlearning as well Appendix 4, Tables XXXVIII and XXXIX for the validity measures.

Sustainable Innovation (SI)

The proposed scale items for sustainable innovation were tested with the principle component analysis and, as expected, all six items loaded onto one factor. This factor was subsequently tested via confirmatory factor analysis and all items were again significant with the model yielding an acceptable goodness of fit. Further analysis supported these findings. The construct is reliable with $\alpha = .948$. Please refer to Appendix 3, Tables XXX and XXXI for the factor analysis findings as well as Appendix 4, Tables XXXVIII and XXXIX for the validity tests.

Environmental Turbulence (Turb)

The hypothesized structure of the environmental turbulence consisted of a two-component construct—one component assessing market turbulence and another assessing technological turbulence. This hypothesized structure was first tested with a principle component analysis, which indicated that two items have negative factor scores and one item had a poor fit in general. These items were reverse-coded and the findings remained the same.

These findings were supported with the later CFA and those two items were subsequently removed. After removing those items and building a second order construct, the confirmatory factor analysis indicated that the remaining two constructs (with five items total) was significant.

Compared with the others, this construct was the most impacted by the removal of scale items, with four items removed throughout the analysis. Subsequent hypothesis testing indicates that this may have impacted its performance in the model. It is possible that these items performed poorly because they were worded negatively (two of them) or did not apply in this context.

Please refer to Appendix 3, Tables XXXII and XXXIII for the factor analysis findings. The validity tests are available in Appendix 4, Tables XXXVIII and XXXIX .

Triple Bottom Line Performance (TBL)

Recall that triple bottom line performance was measured in two ways: one set of scale items asked respondents to compare the *entire organization's* performance to the competition. The second set of measures asked respondents to compare *program* performance to expectations. Both sets of measures yielded an acceptable fit in the principle component analysis. However, the set of measures related to the competition resulted in a three-component solution and the set of measures related to expectations yielded a two-component solution. In the CFA stage of the analysis, the measures related to the entire organization's performance in relation to the competition were cross-loading with other items, resulting in a general poor fit for the measurement model (CFI < .9). Therefore, based on this analysis, the triple bottom line measures chosen are those comparing program performance in relation to expectations, with a two-factor solution.

The findings from the principle component analysis suggested that the measures loaded onto two dimensions—one related to financial measures of performance, and another related to social and environmental measures of performance. This confirms the preceding discussion in which triple bottom line performance was hypothesized to be a multi-dimensional construct. Using the principle component analysis as a guideline, the multi-dimensional second order construct was built. The acceptable goodness of fit indices confirmed the structure of this 11-item scale.

Please refer to Appendix 3, Tables XXXIV and XXXV for all factor loading scores as well as Appendix 4, Tables XXXVIII and XXXIX for the validity analyses.

Common Method Variance

Podsakoff et al. (2003) define common method variance as "variance that is attributable to the measurement method rather than to the constructs the measures represent" (page 879). The authors suggest that this type of bias is a prevalent problem in behavioral research because it is one of the main sources of measurement error in a study. According to Podsakoff et al. (2003), this type of error threatens the validity of the conclusions about the relationships between measures and can oftentimes include a systemic component. It is this systemic error variance that can influence empirical results, resulting in misleading conclusions from empirical data (Podsakoff et al, 2003, page 879; Bagozzi and Yi, 1991; Nunnally, 1978; Spector, 1987; Campbell and Fiske, 1959). Podsakoff et al. (2003) offer numerous tests to assess the presence of common method variance.

A more robust tool for testing for common method variance is what is referred to as the correlational marker technique, which requires the presence of a "marker variable" that is theoretically unrelated to the variables in the study (Williams et al., 2010). This study did not capture variables other than those in the theoretical framework and demographic assessments of respondents. The authors caution against using demographic variables to assess common method variance due to a demographic measure's inability to capture sources of bias that occur due to the measurement context (Williams et al., 2010, page 507). Another restriction of this method is a requirement of a large sample size, which also is not present in this study.

Therefore, in the absence of an adequate marker variable and large sample, I conducted the Harman's single-factor test as suggested by Podsakoff et al., 2003. Compared with the goodness of fit indices for both of the measurement models (shown in the following discussion), the single-factor models displayed very poor fits. The first model, testing independent variables, produced a poor fit: chi square = 1778.872, d.f. = 324, $p<.001$; CFI = .526; NFI = .480; RMSEA = .165. The second model, which tested the dependent and moderator variables yielded a similarly poor fit: chi square = 3600.741, d.f. = 665, $p<.001$; CFI = .425; NFI = .380; RMSEA = .164. The single factor test was also conducted in SPSS, which also showed no presence of common method bias. In sum, common method bias does not seem to be a concern in this research study.

Correlation Test

Next, I conducted a correlation analysis on each of the constructs. The results show that the most strongly correlated variables are Innovation and Learning ($r = .708$) and Learning and Unlearning ($r = .676$). Environmental turbulence, on the other hand, is not strongly correlated with any of the variables in this study. Other variables are moderately to strongly correlated with one another. Please refer to Appendix 5 for the full correlation table.

Hypothesis Testing

The dynamic capabilities theory suggests that a firm's *paths*—or "where it has been"—directly impact its internal processes. In this case, it is hypothesized that a firm's perception of an environmental and/or social concern among consumers, or customer sustainability concern

(CSC), serves as an antecedent of the its processes, namely organizational learning and organizational unlearning.

Similarly, the theory suggests a firm's *positions*, or intangible and tangible resources available to a firm also impact its internal processes. Based on the conceptual framework, those positions are: a sustainable market orientation (SMO), intra-organizational trust (Trust), and sustainability champion influence (Champ).

Finally, the processes are organizational learning (Learning), organizational unlearning (Unlearning) and sustainable innovation (Innov), which lead to performance outcomes of the triple bottom line (TBL).

The hypotheses reflecting the effects of paths and positions on processes and performance outcomes (H1, H2, H3, H4), with contingencies of internal and external conditions (H5, H6, H7) were tested as a path model via partial least square (PLS) analyses, specifically using SmartPLS[2].

---

[2] In addition to the PLS analysis reported here, the theoretical model was tested via SEM in AMOS. However, likely due to the insufficiency of the sample size with the large number of constructs, the model fell just below acceptable fit indices (CFI = .859). Additionally, I also tested each of the relationships using multiple regression analysis in SPSS; however, I did so using first order constructs. Due to the hypothesized structure of the constructs, the second order structure used in PLS is more appropriate for this research. PLS also enabled testing of the entire model and all paths.

PLS modeling was appropriate for this study due to the moderate size of the study sample (n=166); the number of latent variables and size of the structural model prohibited the use of a covariance-based structural equation model (a test using AMOS is discussed in the footnote). Additionally, PLS modeling permits path model testing of both reflective and formative measures, which this study has (Urbach and Ahlemann, 2010; Chin, 2000).

Two models were tested via SmartPLS. The first model examined the main effects in the theoretical framework. The second model tested the interactions one-by-one. Note that one model with all interaction effects testing simultaneously could not be accommodated by PLS testing, given sample size limitations. Also note that unlike SEM modeling, PLS analysis does not provide fit indices. The variance explained and the sign and significance of path coefficients help to assess nomological validity rather than fit indices (Chin, 2000).

The first model explained the variance in the three process variables (organizational learning, organizational unlearning, and innovation) well. The R^2 for Learning is 51.5% and the R^2 for Unlearning is 40.1%. The R^2 for Innov, which is explained by Learning and Unlearning, is 55.5%. These R-square levels are reasonably high, indicating good predictive validity. However, the model did not explain a high proportion of the variance in TBL (R^2 = 6.8%).

The following discussion will highlight the findings of the PLS model to better delineate the relationships between these variables and their predictors. The findings in terms of hypothesis testing are summarized in Table XIV below.

TABLE XIV: HYPOTHESIS TESTING RESULTS—PLS PATH ANALYSES

Hypothesis	Hypothesized Direct Relationship	Path Coefficient	Estimate (t value)	Effect Size	Hypothesis Support
H1a	Customer Sustainability Concern → Organizational Learning (R^2=51.5%)	.108	1.824	.02	Not Supported
H1b	Customer Sustainability Concern → Unlearning (R^2=40.1%)	.146	2.543*	.05	Supported
H2a	Sustainable Market Orientation → Organizational Learning	.245	3.730**	.08	Supported
H2b	Sustainable Market Orientation → Unlearning	-.003	.036	.02	Not Supported
H3a	Intra-Organizational Trust → Organizational Learning	.248	3.073**	.09	Supported
H3b	Intra-Organizational Trust → Unlearning	.155	2.737*	.10	Supported
H4a	Sustainability Champion Influence → Organizational Learning	.341	4.607***	.14	Supported
H4b	Sustainability Champion Influence → Unlearning	.091	1.246	.06	Not Supported
H5a	Customer Sustainability Concern*Sustainable Market Orientation → Organizational Learning	-.055	.6228	NA	Not Supported
H5b	Customer Sustainability Concern*Sustainable Market Orientation → Unlearning	-.062	.4194	NA	Not Supported
H6a	Customer Sustainability Concern*Trust → Organizational Learning	-.125	.6765	NA	Not Supported
H6b	Customer Sustainability Concern*Trust → Unlearning	-.137	.7888	NA	Not Supported
H7a	Customer Sustainability Concern*Champion → Organizational Learning	-.090	.7642	NA	Not Supported
H7b	Customer Sustainability Concern*Champion → Unlearning	-.091	.661	NA	Not Supported
H8	Organizational Learning → Unlearning	.473	5.956***	.22	Supported
H9	Organizational Learning → Sustainable Innovation	.499	7.562***	.31	Supported
H10	Unlearning → Sustainable Innovation	.309	4.510***	.12	Supported
H11	Sustainable Innovation → Triple Bottom Line Performance	.260	2.059*	-.05	Supported

H12	Environmental Turbulence*Sustainable Innovation → Triple Bottom Line Performance	.003	.671	NA	Not Supported

* p < .05, ** p < .01, *** p < .001

Antecedent Relationships

First, the relationship between CSC and its impact on Learning and Unlearning was investigated. While the relationship between CSC and Learning was found to be not significant (β = .108, p > .05,), the relationship between CSC and Unlearning was significant (β = .146, p < .05,). Therefore H1a is not supported but H1b is.

The relationship between SMO and the process variables was also mixed. While the relationship between SMO and Learning was determined to be significant (β = .245, p < .05) the relationship between SMO and Unlearning was not (β = -.003, p > .05). Therefore, H2a is supported but H2b is not.

Next, the relationship between Trust and the process variables is investigated. The relationship between Trust and Learning is significant (β = .248, p < .01) and the relationship between Trust and Unlearning is likewise significant (β = .155, p < .05). Therefore, both H3a and H3b are supported.

With respect to the influence of Champ and the process variables, it was determined that the impact of Champ on Learning is significant (β= .341, p < .001), while the effect on Unlearning is not (β = .091, p > .05). Therefore, H4a is supported but H4b is not.

In summary, SMO, Trust, and Champ positively contribute to Learning, while CSC and Trust contribute to Unlearning. These findings indicate that Learning and Unlearning have

slightly different drivers, with Learning directly determined by more of the antecedent variables than Unlearning.

Moderating Antecedent Relationships

Recall that the role of CSC was hypothesized to positively moderate the relationships between the position variables (SMO, Trust, Champ) and the process variables (Learning and Unlearning). In all cases, these interactions were not indicated by the PLS model and all were found to be non-significant[3]. Therefore, H5, H6, and H7 are not supported. Generally, then, CSC is not an internal contingency condition for the other antecedents of Learning and Unlearning.

Process Relationships

H8 states that Learning is positively related to Unlearning. The PLS model results for this relationship are strong and positive ($\beta = .473$, $p < .001$,) and thus find support for H8[4]. Similarly, the relationship between Learning and Innov was determined to be positive as predicted ($\beta = .499$, $p < .001$). Hence H9 is supported. Finally, according to H10, the relationship between Unlearning and Innov is positive. PLS results indicate this was the case ($\beta = .309$, $p < .001$), thus providing empirical evidence in support of H10. In short, the process variables are related to one another as hypothesized, with Learning influencing Unlearning, and both Learning and Unlearning contributing to Innov.

---

[3] CSC*Trust → Learning, $\beta = -.125$, $p > .05$; CSC*Trust → Unlearning, $\beta = -.137$, $p > .05$; CSC*SMO → Learning, $\beta = -.055$, $p > .05$; CSC*SMO → Unlearning, $\beta = -.062$, $p > .05$; CSC*Champ → Learning, β-.090, $p > .05$; CSC*Champ → Unlearning, $\beta = -.091$, $p > .05$

[4] This relationship was also tested in the opposite direction (unlearning→learning) and found to be significant: $t=5.42$, $p<.05$.

Consequent and Moderating Consequent Relationships

Finally, the relationship between Innov and TBL performance was investigated[5]. This relationship was testing using triple bottom line as a second order construct based on the CFA analysis. Here, the results were significant with $\beta = .260$, $p < .05$. This result indicates support for H11. However, it is worth noting that although this relationship is statistically significant, the low R^2 of 6.8% for TBL performance indicates that Sustainable Innovation may

[5] Two additional tests of the consequent relationship between innovation and triple bottom line performance was conducted. First, the outcome variable was tested as three separate constructs: economic, social, and environmental performance. In two of the three cases, the relationship between performance and innovation is significant. The relationship between innovation and environmental performance is significant with $\beta = .411$, $p < .05$. The R^2 of environmental performance explained by the model is 16.6%. The relationship between innovation and social performance is also significant with $\beta = .264$, $p < .05$. Here, the R^2 of social performance explained by the model is 6.8%. Finally, the relationship between innovation and economic performance was not found to be significant with a $\beta = .182$, $p > .05$. The second test of the consequent relationship between innovation and triple bottom line tested sustainable innovation as a predictor of social and environmental performance, which then leads to economic performance. The relationship between innovation and social and environmental performance (tested as one construct per the measurement model) was significant and strong with $\beta = .326$, $p < .001$. Second the relationship from social and environmental performance strongly predicted economic performance with $\beta = .591$, $p < .001$.

not be a very strong indicator of performance. This was also evident in the effect size analyses, which suggested that when the Innovation-TBL path was removed, learning/unlearning were stronger predictors of TBL performance[6].

Finally, a last interaction relationship was tested. According to H12, environmental turbulence weakens the relationship between Innov and TBL with $\beta = .003$, $p > .05$. Therefore H12 was not supported. In total, Innov has a positive tie to TBL, whereas Turb does not moderate this relationship.

Control Variables

Four control variables were tested for their impact on triple bottom line performance. In all four cases, the variables were not significant with $p > .05$. The first variable, gender of the respondent, was non-significant with $\beta = .053$, $p = .98$. The second variable tested was education of the respondent. That, also, was non-significant with $\beta = .001$, $p = .9997$. The third variable tested was whether the company was public or private. This, also, was non-significant with $\beta = .002$, $p = .93$. Additionally, industry also did not impact triple bottom line performance, $\beta = -.079$, $p = .95$. A final test was conducted to determine whether TBL performance is impacted by whether a company is either manufacturing or services. This relationship was also non-significant ($\beta = .101$, $p = .27$) suggesting that whether a company is focused on innovation

[6] Recall that measures related to the entire organization's performance were not used in the final analysis due to a poor fit in the measurement model. I did, however, test this set of measures as the consequent relationship in the PLS model to compare with the earlier findings. In this test, the construct was tested as formative with three dimensions as suggested by the theory. The consequent relationship between Innovation and TBL was positive and strong with $\beta = .448$, $p < .01$ and the percent of variance in TBL performance explained by the model is $R^2 = 20.3\%$. Additionally, when I test this measure as two-dimensional as was done in the earlier analysis of program performance, 21% of the variance in TBL performance is explained by the model and the relationship between innovation and TBL is significant with $\beta = .452$, $p < .01$.

related to services or manufacturing does not impact its performance. In sum, this analysis suggests that, as expected, triple bottom line performance, and thus the relationships in the theoretical model, is not impacted by the control variables.

Please refer to Table XV for a summary of the proposed relationships and findings of this analysis.

TABLE: XV: SUMMARY OF CONTROL VARIABLE FINDINGS

Control Variable	**Path Coefficient**	**P Value**	**R^2 of TBL Performance**
Gender	.053	.98	6.9%
Education	.001	.9997	6.9%
Private vs Public Company	.002	.93	6.8%
Industry	-.079	.95	7.2%
Manufacturing vs Services	.101	.27	7.8%

Predictive Validity

To assess the predictive validity of the findings, the blindfolding procedure was conducted on each of the outcome variables (learning, unlearning, innov, and TBL). Otherwise known as the Stone-Geisser Q^2, this measurement represents "how well observed values are reconstructed by the model and its parameter estimates" (Chin, 1998). A Q^2 statistic less than zero suggests that the model does not have predictive relevance. A Q^2 statistic above zero suggests the model does have predictive relevance and indicates that the observed values are well

reconstructed (Henseler, et al., 2009). In all cases, the model was found to have predictive validity. Findings are reported in Table XVI below.

TABLE XVI: PREDICTIVE VALIDITY OF THE OUTCOME VARIABLES

Variable	**Q^2 (Structural Regression)**
Organizational Learning	.27
Organizational Unlearning	.25
Sustainable Innovation	.42
Triple Bottom Line Performance	.05

Effect Size

Hanseler et al. (2009) propose measuring effect size (f^2), which can be used as a gauge to assess the effect of a predictor variable at the structural level. To test for effect size, I used the method offered by Henseler et al. (2009), which is to calculate the f^2 statistic using the R^2included and R^2excluded measures. According to Cohen (1988), effect sizes of .02, .15, and .35 can be considered small, medium, and large, respectively. Effect size measurements and interpretations are available in Table XVII below. Generally the effect sizes are small to medium. However, it is worth noting the result of the effect size of the relationship between Sustainable Innovation and TBL performance. Since Sustainable Innovation-TBL is the only consequent relationship in this model, testing effect size requires removing that path and replacing it with two direct paths between Organizational Learning-TBL and Organizational

Unlearning-TBL. When this occurs, the R^2 of TBL actually increases, thus suggesting that these two variables (together) have a stronger impact on TBL performance. Interestingly, this indicates that although Sustainable Innovation does have a positive relationship with TBL performance, the variance in TBL performance may be better explained by other variables.

TABLE XVII: EFFECT SIZE AND STRENGTH OF INDEPENDENT VARIABLES

Dependent Variable	Independent Variable	f^2	Strength
Learning (R^2=51.5%)	Customer Sustainability Concern	.02	Small
	Sustainable Market Orientation	.08	Small to Medium
	Sustainability Champion Influence	.14	Small to Medium
	Intra-Organizational Trust	.09	Small to Medium
Unlearning (R^2=40.1%)	Customer Sustainability Concern	.05	Small
	Sustainable Market Orientation	.02	Small
	Sustainability Champion Influence	.06	Small
	Intra-Organizational Trust	.10	Small to Medium
Sustainable Innovation (R^2=55.5%)	Organizational Learning	.31	Medium to Large
	Unlearning	.12	Small to Medium
TBL Performance (R^2=6.8%)	Environmental Turbulence	.00	Small
	Sustainable Innovation	-.05	Negative

Additional Analyses

In addition to hypotheses testing, I analyzed if the process variables in this model (unlearning, learning, and sustainable innovation) mediate the independent and dependent variables in the model. The method used to test the mediation effects is the Baron and Kenny four-step method as used by Bontis et al. (2007). Each model had a: 1) direct path from the independent variable to the dependent variable, 2) direct path from the independent variable to the mediator variable, 3) direct path from the mediator variable to the dependent variable, and 4) direct path from the independent variable to the dependent variable while the indirect path from the independent variable to the mediator to the dependent variable was present.

In all cases except one, the mediation was not significant. The first criterion, which requires a direct link between the independent variable and the dependent variable, was not met in all but one test. That test and the three subsequent steps of the Baron and Kenny method determined that Learning mediates the relationship between Champ and Innov. In this case, the Sobel test statistic of 3.67 was significant ($p < .05$).

Summary of Findings

The model was largely empirically supported, principally in terms of the main effects. The antecedents of champ, SMO, and trust were found to positively drive Learning, and those of Trust and CSC were found to determine Unlearning. Importantly, Learning influences Unlearning, and both contribute to Innov. Finally, Innov leads to TBL. None of the moderating effects were supported.

CHAPTER SIX: DISCUSSION AND IMPLICATIONS

To the best of my knowledge, this dissertation is the first empirical study examining the dynamics – antecedents, boundary conditions, and outcomes -- of sustainable innovation. This research finds that sustainable innovation rests on a range of firm factors as well as internal learning processes; importantly as well is that sustainable innovation leads to significant levels of greater social, economic, and environmental firm performance.

Discussion

This dissertation addresses the overarching question: *how do firms effectively pursue sustainable innovation and how does such innovation impact triple bottom line performance?* The findings highlight strategic, climate, leadership, and market antecedents of sustainable innovation, the important role of the learning and unlearning processes, and the impact of such innovation on performance. The framework for the study is guided by dynamic capabilities theory.

To address this overarching question, I developed and answered a series of sub-questions. First, *what contributes to effective sustainable innovation?* I examined sustainable market orientation, intra-organizational trust, sustainability champion influence, and customer sustainability concern as drivers and interacting factors. The results indicated that direct relationships exist between these variables and the process variables (organizational learning and unlearning), which both were found to be strong antecedents of sustainable innovation.

More specifically, customer sustainability concern was found to have a positive relationship with unlearning—suggesting that a perceived need in the marketplace is a key component of a firm's decision and ability to discard ineffective routines and behaviors.

Customer sustainability concern did not, however, impact organizational learning. Interestingly, sustainable market orientation had an opposite effect. The relationship between sustainable market orientation and organizational learning was positive while the relationship with unlearning was not supported. Intra-organizational trust, however, was found to impact *both* organizational learning and unlearning. And, finally, the influence of a champion was found to impact organizational learning but not unlearning.

These relationships suggest a few things. First, the mixed relationships between customer sustainability concern and sustainable market orientation with the process variables (organizational learning and unlearning) point out that these two process constructs are distinct and have differential effects. It's quite possible that the positive relationship between CSC and unlearning indicates that CSC requires revisiting established beliefs about the target market, what they want and how the firm can deliver on those needs. SMO, on the other hand, has a positive relationship with learning. This confirms previous tests of the market orientation-learning relationship, but adds to it in that it broadens the perspective to account for multiple stakeholders. This relationship indicates that firms add to previous customer—or stakeholder—related knowledge as part of the innovation process.

Additionally, these findings could also suggest that firms with a sustainable market orientation are inclined to learn about the marketplace, and its many stakeholders, but hold off on unlearning until additional information is gathered. While market orientation is largely centered on learning activities (as indicated by past studies that bring learning and market orientation together e.g., Slater and Narver, 1995; Hurley and Hult, 1998), unlearning is a separate behavior that involves discarding ineffective routines. It makes logical sense that sustainable market orientation and learning are related since gaining and collecting information, and taking action

on those insights, is part of the strategic focus of a market oriented firm. However, sustainable market orientation may not directly lead to unlearning since this is about deconstructing what the organization knows about markets and customers or at a minimum, re-examining its knowledge base.

The presence of trust, however, is unique from other antecedent variables in that it specifically addresses the embedded culture of the organization, not activities per se. Not surprisingly, this cultural component impacts both process variables directly. As hypothesized, these finding suggest that a high-trust culture can lead firms to undergo learning and unlearning behaviors in these evolving markets. This suggests that a firm's culture is a critical component in its ability to respond to needs in the market, as well as undergo the difficult process of unlearning old, ineffective ways of doing business.

Finally, the influence of a champion impacted learning behaviors but not unlearning, which may suggest that a champion's influence is important, but not quite strong enough to impact organizations to the level of discarding ineffective behaviors, which is arguably a more encompassing and radical behavior than the learning process. However, the strong relationship between the influence of a champion and organizational learning supports the assertion that this person is a critical antecedent to processes related to sustainable innovation.

These findings point out that organizational learning and unlearning are separate activities that appear to have different drivers. While learning is about acquiring and disseminating, unlearning is about reviewing and discarding. If an organization is interested in sustainability, it may mean that it is poised to discard or at least re-examine its current understanding of its target market's needs, taking it beyond the previous assumption that it can continue to build knowledge in the same way it always has.

The second sub-question this dissertation addresses is: *what organizational processes impact sustainable innovation?* To address this question, I investigated the role of organizational learning and unlearning processes. Both of these processes had a very strong relationship with sustainable innovation, highlighting the importance of each of them. It is worthwhile to note that while organizational learning is well established in the literature, unlearning is not. Unlearning, to my knowledge, has not been empirically studied – only conceptually argued -- in the literature. The finding that unlearning is a critical antecedent of sustainable innovation is one of the key contributions of this study.

Additionally, this research uncovered an interesting finding, which is that although the relationship between learning and unlearning is positive, it also appears to be sequential. In the PLS model, the relationship from learning to unlearning was very strong in both directions. However, during additional analyses in SPSS (regression) and AMOS, the data indicated this relationship to be sequential, from learning to unlearning. Many of the relationships in the regressions also suggested that these processes are sequential (the antecedent variable was more strongly associated with one of these two variables).

The third sub-question addressed by this research is: *does sustainable innovation lead or not to higher firm performance?* I measured whether sustainable innovation leads to greater triple bottom line performance. This relationship was significant indicating that the relationship between sustainable innovation and performance is positive, demonstrating the value of sustainable innovation. This study may be the first to empirically identify a direct determinant of the triple bottom line, which has long been argued as worthy of study but rarely formally investigated. The finding that sustainable innovation does in fact lead to greater social, environmental, and economic performance is a significant contribution of this study.

Finally, I tested some boundary conditions around sustainable innovation. I investigated environmental turbulence as a contingency of the sustainable innovation-performance link. I also tested customer sustainability concern as a contingency between the antecedent and process variables in the model. While the relationships were theoretically grounded, they were not supported by the data.

The following discussion furthers this analysis by offering implications for managers and academicians.

Managerial Implications

For innovation practitioners, this study highlights the importance of having an organization-wide approach to sustainable innovation. The sustainability literature has established that firms are typically addressing these issues without any overarching strategy (Sheth et al, 2011, p. 22; Lubin and Esty, 2010). Taking this into consideration, this study empirically demonstrates the role of a comprehensive approach to innovation, beginning with a market-oriented strategy aimed at addressing the needs of various stakeholders.

One of the first implications of this study is that it emphasizes the important role of the champion, typically a manager who is *not* part of the day-to-day activities related to innovation, but who openly supports these initiatives. For firms pursuing sustainable innovation, it makes sense for them to hire, or assign, a sustainability champion to openly advocate for these initiatives. This person encourages new ideas, supports sustainability initiatives, and is passionate about it. Additionally, this person is well entrenched in all levels of the organization. He or she works with employees—all the while having the support of senior management. It is clear from this research that a champion is a critical component—and a necessary first step—of

organizations pursuing sustainable innovation. Because sustainable innovation involves revisiting many aspects of innovation in a fresh new way, a champion is necessary to overcome internal barriers such as organizational inertia. Past studies show champions are valuable for innovation endeavors (e.g., Chandy and Tellis, 1998), but may be more so in the case of sustainability, where new ideas, methods, and processes are introduced in order to produce sustainable new products, services, or operations (e.g., Senge, 2007).

This study also demonstrates the importance of having a high level of trust within the organization. The strong relationship between trust and learning/unlearning suggests that this is a critical antecedent of the innovation process. Practitioners pursuing sustainable innovation should prioritize the development and growth of a high-trust environment within their organization, which can be done in a number of ways. First, it is important to foster the type of environment where employees can share ideas and pursue risky projects, without penalty for failure. Another way to build trust is to foster an open environment where ideas are shared and built upon. Employees at all levels of the organization—including senior managers—should be open, forthcoming, respectful and loyal to one another. Another way to build trust within an organization is to promote team-building events in which relationships throughout the organization are strengthened. Together, all of these activities will enhance and build an environment in which employees feel trusted and encouraged to pursue new and exciting initiatives.

A trusting climate may be particularly important for the unlearning process, where routines are removed if they are not integral to sustainable innovation. In a trusting environment, workers regard one another's expertise, like their colleagues, and rely on their integrity and virtues to get tasks and projects done well and on time. In such a social capital-rich organization,

unlearning can occur more readily since there are fewer reasons to protect past ways of broaching innovation and sacred cows may be willingly given up for the greater cause of socially, environmentally, and economically meaningful new products and processes.

This study also emphasizes the need for an ability to sense, learn about, and address the needs of stakeholders at multiple levels. A sustainable market orientation, as well as an ability to perceive a sustainability concern among the target audience, are critical antecedents to the learning and unlearning processes. This involves being in touch with the target market, as well as the organization's stakeholders, to better understand their preferences and desires in regard to sustainability initiatives. It also involves knowing your shareholders, suppliers, and all related partners extensively. This means employees should be encouraged to foster relationships outside of the organization and share their experiences among their co-workers. Additionally, since sustainability initiatives can impact all areas of the organization, including marketing, supply chain, product design, distribution and recycling (Closs et al., 2011, p. 101), this complex process should involve the entire firm in some fashion, as stated earlier.

Another implication of this study is that practitioners need to recognize the importance of unlearning, or discarding, old routines and behaviors that are not relevant to sustainability-related innovation. Doing things "the old way" is directly contrary to the essence of the sustainability movement, which spurs firms to conduct business in a manner that is mindful of social and environmental issues. Unlearning certain behaviors may prove to be challenging for firms that have long done things a certain way. However, this study empirically demonstrates the importance of such unlearning initiatives, stressing the role managers play in ensuring their firm's culture is flexible and willing to make the changes necessary to address these evolving

markets. Doing so may be difficult and could possibly require deep changes that impact personnel or teams, but the payoff will be a fresh and efficient environment.

Similarly, organizations should recognize the importance of organizational learning—including the acquisition and dissemination of information related to these pursuits. This process has a direct tie to innovation, suggesting it is also a critical antecedent of the innovation process. This research suggests that firms who can effectively uncover information—and effectively disseminate it throughout the organization—are at an advantage when it comes to sustainable innovation. To foster a learning organization, managers should encourage, and offer employees the opportunity, to pursue learning outside of the office. Additionally, managers should foster an open environment in which communication is encouraged and learning is shared between employees. Helpful in this regard may be an open floor plan, with fewer private offices, as well as more room for employees to congregate and share ideas. This environment, as demonstrated by this research, will enhance a firm's capabilities when it comes to sustainable innovation.

At the same time, sustainability typically represents a triple bottom line orientation that addresses goals of economic profitability, respect for the environment, and social responsibility. A firm-wide orientation toward meeting these goals is in line with the notion that these initiatives can impact the entire organization, thus again stressing the importance of a firm's strategic posture. Therefore, the need to adopt a triple bottom line measure of performance is another implication of this study; simply meeting economic goals is no longer adequate when pursuing sustainability initiatives. And that goal should be part of the overall mission of the organization—and should be disseminated throughout the organization. Therefore, managers should establish concrete goals related to social and environmental performance when introducing sustainability as an organizational initiative.

Finally, a last implication of this study is that sustainable innovation *does* pay off for the firm. Not only does it result in greater social and environmental performance, it also contributes to greater economic performance. This confirms what has been suggested for some time now; it is worthwhile for firms to pursue sustainability initiatives. This isn't just because customers, or even stakeholders, are demanding it. It's also because it is worthwhile from an economic standpoint.

Research Implications

This research is perhaps one of the first studies to examine sustainable innovation and offers many implications for research. First, it has uncovered what fuels and enables sustainable innovation, namely a sustainable market orientation, intra-organizational trust, the influence of a champion and the perception of a concern among members of the target audience. All of these drivers, in one way or another, impact the sustainable innovation process. Together, these antecedents impact organizational learning and unlearning, which have been shown to have different drivers or inputs.

This dissertation also contributes to the field in that it highlights the processes involved in sustainable innovation. While the link between innovation and organizational learning has been discussed, sustainable innovation and unlearning are less frequently addressed by the extant literature. Additionally, a key contribution of this study is the creation, testing, and subsequent confirmation of a set of scale items to measure unlearning. Further, the confirmed relationship between unlearning and innovation highlights a need for us to better understand this understudied activity. Finally, a key contribution of this dissertation is the better understanding of sustainable innovation, which is a less certain and newer activity than traditional innovation.

Other new scales were also developed in this dissertation, including sustainable market orientation. While researchers have begun recently to discuss an expansion of market orientation to include other stakeholders as the future wave of research on market orientation [cite Hult etc.], I have gone ahead and developed the concept further as well as operationalized it. Sustainable market orientation was found to be an antecedent of learning and sustainable innovation. Future research could be done to elaborate the uses and value of sustainable market orientation for a range of other issues.

Furthermore, this dissertation also addresses a call for a capabilities perspective in the context of sustainability (Connelley et al., 2011), and more specifically, sustainable innovation. Although numerous theories have been applied in a sustainability context in the extant literature: resource advantage theory (Hunt, 2011), neoclassical growth theory (Hunt, 2011), dynamic competition growth theory (Hunt, 2011), social network theory (Chabowski et al., 2011), grounded theory (Closs et al., 2011), the societal consumption perspective (Huang and Rust, 2011), the natural-resource based view (Menguc and Ozanne, 2011), the resource based view (Murray et al., 2011; Bansal, 2005), market orientation (Hult, 2011), and institutional theory (Bansal, 2005), the dynamic capabilities theory has not yet been applied (and empirically tested) in relation to sustainability to the best of my knowledge. This theoretical approach offers greater insight into how the firm's history (paths), resources (positions) and activities (processes) impact performance in an interesting and challenging environment.

Another research implication of this study is that it offers a better understanding of the roles of organizational learning and unlearning in sustainable innovation. Again, while the collection and dissemination of information has been well studied, the notion of unlearning has only been discussed at the theoretical level. This study advances the literature by

operationalizing this concept into a valid measure that was strongly supported by the data. Additionally, the study of this concept in tandem with organizational learning is itself a contribution in that it further delineates what has been considered a fuzzy conceptual relationship between organizational learning and unlearning. This study offers a better understanding of the relationship between these two processes, which is that they are in fact separate activities with their own drivers and antecedents. Additionally, they both strongly contribute to sustainable innovation, a key finding of this dissertation.

Finally, another implication of this study is that it offers insight and support for the triple bottom line measure of performance. This research highlights a significant relationship between innovation and social, environmental, and economic performance, suggesting that these initiatives contribute to the bottom line for firms. This study contributes to the literature a scale for TBL performance as well as suggests that these initiatives are worthwhile investments. To the best of my knowledge, the sustainable innovation – triple bottom line performance relationship has not been empirically tested and this study is the first to do so.

As an outcome of this research, academicians will better understand how these elements of the internal environment can work in tandem to offer firms an ability to better collect and disseminate information as well as unlearn old behaviors, all as part of the innovation process. The further supports the idea that firms should be configured appropriately well in advance to pursuing initiatives related to sustainability. These dimensions of an organization are well embedded into the fabric of an organization; they are not simply activities or behaviors that can be applied quickly and haphazardly.

Limitations and Future Research Directions

This study is subject to several limitations, which offer interesting opportunities for future research. One of these limitations is the cross-sectional nature of the study. The survey was not longitudinal, so we do not have any findings on the specifics of how sustainable innovation works over time and its impact. Future work can execute multiple waves of surveys to capture information before, during, and after sustainable innovation projects or programs are done, obtaining a more detailed and nuanced understanding of the dynamics of these endeavors.

Another limitation is the sample size of this study. The ending sample was too small to carry out a full structural equation modeling analysis. The PLS approach enabled path analysis of the data, including both reflective and formative measures, but is not a complete substitute for SEM. Future research can expand the survey to ensure a larger ending sample. Nonetheless, this is one of the first studies to utilize LinkedIn Groups as a source for survey respondents, leveraging the Internet and social media as a more current and effective means of identifying, contacting, recruiting, and surveying individuals in a targeted fashion. Methodologically, the approach can certainly be fine-tuned, but offers a survey technique in an age when traditional mail and email methods are yielding negligible response rates.

A third limitation is the lack of contextual insights provided through this study about sustainable innovation. Exactly how firms go about this challenging enterprise of creating new products, services, or procedures that are socially, environmentally, and economically friendly can only be deeply understood through qualitative methods such as depth interviews and case studies. Observing managers in action moving a sustainable innovation agenda ahead would be a helpful complement to the survey findings from this study, providing a more complete picture of

what is involved to effectively innovate in this new arena of sustainability. In the future, qualitative studies would be a good complement to this study.

In terms of opportunities, while this research examines several variables that impact sustainable innovation and firm performance, several others may play a role as well. The hypotheses in the research model are those I believe most logically extend from the dynamic capabilities and market orientation literatures; however, other variables and theoretical views could also be examined. For example, it would be worthy to integrate the knowledge management literature or the stakeholder theory perspective into the theoretical model. It would also be interesting to understand the stage-gate procedures of firms pursuing innovation since this type of innovation could impact all levels of the organization.

Additionally, future research could incorporate more information about the target market. It would worthwhile to determine, from a customer's perspective, if they are in fact seeking more environmentally-friendly or socially-friendly alternatives to the products they purchase. And, of course, whether they are willing to pay more for those products. Secondary or mixed methods research could assist in examining these characteristics from a perspective other than that of the firm.

Another opportunity is integrating secondary data into future research. For example, additional insight could be obtained by better understanding the relationship between customer needs and perceptions and organizational processes, such as learning and unlearning. Examining this relationship with secondary data related to customer perceptions could offer stronger support for the relationship.

Another opportunity is to apply some of the new measures from this study in investigations of other issues. For example, it would be interesting to examine the unlearning

concept in a different context that is undergoing even greater, and more turbulent, change. For example, the health care industry, which has experience rapid change in the past five years. Understanding how firms reconfigure themselves in the face of such evolution would be a very interesting extension of this study.

Finally, investigating the triple bottom line as an outcome variable in additional studies would also be interesting. For example, it would be interesting to determine other contributing factors to environmental, social, and economic performance. Possible studies could investigate the roles of knowledge management, supply chain decisions, team cohesiveness, stakeholder orientation, and strategic orientation.

CONCLUSION

In conclusion, this research fills a gap in the literature by offering a unique glimpse into the sustainable innovation process, its drivers, antecedents, and outcomes. How a firm engages in sustainable innovation, as well as learning and unlearning, is of interest to both academicians and practitioners, particularly in such a timely context as sustainability. The goal of this research was to fill a gap in the literature by testing the interconnected relationships between the learning, unlearning and innovation processes within firms. In developing a better understanding of these processes, as well their drivers and antecedents, the challenges inherent in the innovation process can be mitigated. Additionally, the context of sustainability offers an interesting, useful, and timely perspective from which to apply a theoretical lens to better understand these important firm phenomena.

The outcome of this research is noteworthy: four measurements scales were developed, tested, and validated; the unlearning concept was advanced from a theoretical concept to an empirically tested construct; critical drivers of sustainable innovation were uncovered; and there is evidence that sustainable innovation impacts firm performance. Since the topic of sustainable innovation is still nascent in the field of marketing, this research offers a strong case for its role within the organization.

It is also worth mentioning the outcome of decisions regarding Herman Miller's Mirra chair. Today, the firm's website markets the product as a "green chair" and reports that the product does not contain PVC. It is made from 33% recycled materials, is 96% recyclable, is touted as being easy to disassemble, and sells for over $800. The Mirra chair has received numerous environmental certifications and has won various industry awards, including being named among the "Top 10 Green Products" of 2003 by *Architectural Record* magazine and

Environmental Building News. The chair is manufactured using in the “cradle to cradle” design protocol discussed in this paper.

Appendix 1a: Initial Email Message

Dear Sustainability Professionals Group Members,

A member of our group is a doctoral student at the University of Illinois at Chicago and is conducting her research on sustainable innovation. She has asked for our help. If your organization is working to be more socially and/or environmentally friendly in regard to the products and/or services it produces, or how it operates internally, please help Kelly by clicking on the link below to participate in her research.

Kelly is studying what leads to sustainable innovation and how it translates into performance for the firm. Her research focuses on organizational learning and unlearning, particularly how we disregard old, ineffective processes. She is also looking at the triple bottom line and how innovation contributes.

In exchange for our participation, Kelly has offered to share with us her results. I think we'll all benefit from this information and hope you'll help Kelly. She's hoping to get at least 400 people to participate. In addition, she will be raffling off two $150 gift cards when the project is complete.

Thank you,

Steve

www.linktoresearch.com

Appendix 1b: Reminder Email Message

Dear Sustainability Professionals,

A few weeks back, I forwarded a link to a survey on behalf of one of our members, who is researching the impact of sustainability initiatives on a firm's triple bottom line performance. If your organization is working to be more socially or environmentally friendly, and you haven't already participated, please click on the link below to fill out Kelly's survey.

Kelly's research is sponsored by Dr. Cheryl Nakata, who is Department Head and Professor of Marketing at the University of Illinois at Chicago. She hopes that together with Professor Nakata, she will publish her research in a leading journal in her field. But, first she needs our help to collect meaningful answers to the questions in her survey. The survey takes place in two parts: the first gathers some demographic information of our group. The second part provides Kelly with a comprehensive view of the innovation process – it is the first study of this kind in her field.

Kelly will be teaching undergraduate and MBA students specifically interested in sustainability initiatives. Many of you have passed on examples of your work for her to share with her students and she has asked me to thank you as well.

Finally, in exchange for our participation, Kelly has offered to share with us her results and I think we'll all benefit from this information. **She's still a long way away from her goal of 400 respondents.** As a thank you, Kelly will enter you into a raffle for one of two $150 gift cards, which will take place once she reaches this goal.

Survey Link: www.linktoresearch.com

Thank you,

Steve

Appendix 1c: MojaLink Blog Post

I'm a doctoral student at the University of Illinois at Chicago and I'm writing my thesis on sustainable innovation. I'm particularly interested in how firms renew themselves in order to achieve triple bottom line performance. If your organization is working to be more environmentally and/or socially friendly in terms of the products and services it produces, or how it operates internally, please help by clicking on the link below to participate in my research.

In a nutshell, I'm studying what leads to sustainable innovation and how it translates into performance for the firm. My research focuses on organizational learning and unlearning, particularly how we disregard old, ineffective processes. I'm also looking at the triple bottom line and how innovation contributes.

My research is sponsored by Dr. Cheryl Nakata, who is Department Head and Professor of Marketing at the University of Illinois at Chicago. I hope that, together with Professor Nakata, I will publish my research in a leading journal in the field of marketing or strategy. But, first I need your help to collect meaningful answers to the questions in my survey. The survey takes place in two parts: the first gathers some demographic information of our group. The second part provides me with a comprehensive view of the innovation process – it is the first study of this kind in my field.

In exchange for your participation, I'm offering to share my results with those interested. I think we'll all benefit from this information and hope you'll help with my survey. As a thank you for your time, I'll be raffling off two $150 gift cards when the project is complete. Thank you for helping with my research, I really appreciate it!

www.linktoresearch.com

Appendix 1d: Part II Email

Dear Sustainability Professional,

Thank you for completing part one of my survey, which measures the demographics of our group. A link to the more important part, about innovation, is below. Your input is very valuable to my research and I greatly appreciate your time. Please help me reach my goal of 400 completed surveys!

Please feel free to reply to this email with any questions. If you provide your name and email at the end of part two, I will send you a summary of my results and enter you into the raffle for one of two $150 gift certificates.

Again, thank you for helping with my dissertation research!

Survey Link:
www.linktoresearch.com

Kelly

Appendix 2a: Survey, Part I

Thank you for your interest in this study. It is a two-part online or web survey on sustainable innovation. The purpose of the study is to determine how companies pursue sustainable innovation effectively.

The benefits of participating are helping the researcher learn about sustainable innovation, so she can provide managers with useful information to improve sustainable practices. In exchange for completing the survey you will receive a copy of the results if you request it, and your name will be entered into a drawing to win one of two $150 gift certificates. There are no risks for participating in this study other than what you encounter in normal daily life.

Your participation in this study is completely voluntary and confidential. If at any time you wish to withdraw from the study, you can do so without penalty. Your answers to the survey are confidential in that your individual identity will not be linked to your answers, and all answers across all survey participants will be aggregated without identifying individuals or their businesses.

Part I of the survey will take about 5 minutes to complete and Part II about 15 minutes. Once you complete the survey, you will not be able to access the answers. This feature ensures that your responses are secure and confidential. No one other than the researcher will be able to see them.

Proceeding into and answering questions in the survey indicates that you have agreed to participate in the study. If you have any questions or concerns, please contact Kelly Weidner, Ph.D. Candidate, University of Illinois at Chicago (UIC), 601 S. Morgan (MC 243), Chicago, IL 60607, 312-996-2680, kelly_weidner@hotmail.com. You may also contact the UIC Institutional Review Board with any questions or concerns (312-996-1711).

If you agree to participate, please proceed into Part I of the survey by clicking the link below.

Thank you for your consideration,
Kelly Weidner, Ph.D. Candidate, University of Illinois at Chicago

This survey has two parts. Part I is the entry survey, and Part II is the main survey. After you complete Part I, you will be sent an email with the weblink to Part II. The questions below comprise Part I, which will take about 5 minutes to complete. Please answer the questions with respect to yourself and the strategic business unit (SBU) you are a part of.

An SBU is one of several businesses or companies within a larger firm. If your firm has only one business, please answer the questions with respect to that business. In this case whenever you are asked about your SBU, answer it in relation to your entire firm.

Will you be answering this survey with respect to an SBU or entire business?

- SBU, because my division is one of several businesses within a larger firm.
- Business, because my firm only has one business unit.

Please consider the following definition of sustainable innovation when answering questions in this survey. Sustainable innovation is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity. The innovation can be a new or improved product or service, or a new or improved process anywhere in the business, such as in manufacturing, distribution, or the supply chain.

Has your SBU created a sustainable innovation in the last five (5) years?

- Yes
- No

In what areas has your SBU created sustainable innovations? [Check all that apply]

- Products
- Services
- Supply Chain
- Manufacturing
- Marketing
- Management
- Other:

What percentage of your SBU’s product portfolio's annual sales is from sustainable products, if any? [Write %]

What percentage of your SBU’s service portfolio's annual sales is from sustainable services, if any? [Write %]

Five years ago, what percentage of your SBU’s product portfolio's annual sales was from sustainable products, if any? [Write %]

Five years ago, what percentage of your SBU’s service portfolio's annual sales was from sustainable services, if any? [Write %]

Have you ever been directly involved in a sustainable innovation project or program in your

SBU?

- Yes
- No

What was your role in that sustainable innovation project or program? [Check one]

- Overseeing executive or manager
- Team member
- Other, please specify:

What is your primary function in your SBU? (Check one)

- Marketing
- IT
- Manufacturing
- Product Development
- Procurement
- Finance
- Sales
- General Management
- Operations
- Business Development
- Other: please specify:

Is your company publicly traded?

- Yes
- No

What was your SBU's total sales volume in 2011? [Please input number]

How many people are employed in your SBU? [Please input number]

What is your SBU's primary industry? [Check one]

- Agriculture, Forestry, And Fishing
- Mining
- Construction
- Manufacturing
- Transportation, Communications, Electric, Gas, And Sanitary Services
- Wholesale Trade
- Retail Trade
- Finance, Insurance and Real Estate
- Services
- Public Administration
- Other:

What country is your SBU located?

If your SBU is in the U.S., please indicate the state.

How many years ago was your SBU established?

How many years have you been employed at your SBU?

What is the level of the position you hold? [Check one]

- Staff
- Manager
- Director
- Senior Management (Vice President or Above)
- Owner/CEO

What is your gender?

- Male
- Female

What is the highest level of education you've completed?

- Some High School
- High School
- Some College
- College Degree
- Master's Degree
- Professional Degree (JD, MD) Ph.D.

Please provide your email address to receive a link to Part II and to receive the final survey results.

Thank you very much for completing Part I of the survey! Your answers are greatly appreciated.

Appendix 2b: Survey, Part II

Thank you for participating in this study on sustainability. You've completed Part I, and below is Part II. Please answer all questions with respect to yourself and the strategic business unit (SBU) you are a part of. Please note that you may recognize some questions from Part I of the survey.

Please consider the following definition of sustainable innovation when answering questions in this survey. **Sustainable innovation** is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity. The innovation can be a new or improved product or service, or a new or improved process anywhere in the business, such as in manufacturing, distribution, or the supply chain.

An SBU is one of several businesses or companies within a larger firm. If your firm has only one business, please answer the questions with respect to that business. In this case whenever you are asked about your SBU, answer it in relation to your entire firm.

Will you be answering this survey with respect to an SBU or entire business?

- SBU, because my division is one of several businesses within a larger firm.
- Business, because my firm only has one business unit.

Customer Sustainability Consciousness

To what extent do your SBU's targeted customers believe each of the following:

- Preservation of the environment is one of the most important issues facing society today
- Firms can be profitable while addressing environmental issues

How often do your SBU's targeted customers engage in the following activities?

- Choose the environmentally friendly alternative product or service if one of similar price is available
- Choose the environmentally friendly alternative product or service regardless of price
- Investigate the environmental effects of products or services prior to purchase

To what extent do your SBU's targeted customers believe the following:

- Social equity is one of the most important issues facing society today
- Firms can be profitable while addressing social issues such as engaging in fair labor practices and helping the community

How often do your SBU's targeted customers engage in the following activities?

- Choose the socially friendly alternative product or service if one of similar price is available
- Choose the socially friendly alternative product or service regardless of price
- Try to discover the social effects of products and services prior to purchase

Sustainable Market Orientation

In our SBU we consider and balance what our customers need with the...

- environmental concerns of other stakeholders (such as shareholders, governments, the

public)
- social concerns of other stakeholders
- economic concerns of other stakeholders

Organizational Learning
When working on a sustainability innovation program, we in the SBU...
- visit other companies to improve our knowledge of sustainability
- attend all sorts of expert presentations to improve our knowledge of sustainability.
- attend training programs to improve our knowledge of sustainability.

When working on a sustainability innovation program, we in the SBU...
- exchange newly acquired information with one another to improve our knowledge of sustainability.
- share newly acquired information about sustainability with top managers.

When working on a sustainability innovation program, we in the SBU...
- encourage teamwork, team decision making, and internal communication
- resolve conflicts with one another

In our SBU we accumulate extensive knowledge of, and experience in,...
- developing new sustainable products
- formulating new sustainable processes

Sustainable Market Orientation, part 2 (note: order is split because items are phrased similarly)
In our SBU we strive to meet the needs of our customers while considering the...
- environmental needs of other stakeholders (such as shareholders, governments, the public)
- social needs of other stakeholders
- economic needs of other stakeholders

Unlearning
When working on a sustainable innovation program, we in the SBU...
- assess our knowledge and routines to determine if they are relevant.
- evaluate our knowledge and routines to see if they are useful.
- discard existing knowledge and routines that do not apply.
- are willing to set aside old ways of doing things.

When working on a sustainable innovation program, individuals in our SBU...
- find that old habits are so difficult to break that it sometimes requires a change in personnel to achieve.
- are willing to set aside the old way of doing business to adapt.
- evaluate their own knowledge and routines to see if they are useful.
- discard their own existing knowledge and routines that do not apply.

Sustainable Innovation

Sustainable innovation is the generation, acceptance, and implementation of a new or improved innovation that incorporates a general concern for social equity and environmental integrity, without sacrificing economic prosperity. The innovation can be a new or improved product or service, or a new or improved process anywhere in the business, such as in manufacturing, distribution, or the supply chain.

To what extent do you agree or disagree with the following statements?

- Over the past two years, our SBU has done a good job generating sustainable innovation processes
- Over the past two years, our SBU has done a good job designing sustainable innovation processes
- Over the past two years, our SBU has done a good job implementing sustainable innovation processes

To what extent do you agree or disagree with the following statements?

- Over the past two years, our SBU has done a good job generating sustainable innovation products and services
- Over the past two years, our SBU has done a good job accepting sustainable innovation products and services
- Over the past two years, our SBU has done a good job implementing sustainable innovation products and services

Intra-Organizational Trust

Employees throughout this SBU...

- Are competent at their jobs.
- Uphold professional work values.
- Are skilled and knowledgeable to do their work.
- Really care and are concerned for each other.
- Are close enough to freely
- Are close enough to freely share ideas, thoughts, and feelings.
- Invest emotionally in their work relationships.
- Enjoy and like one another.
- Do what is right rather than expedient.
- Deal with each other fairly and justly.
- Treat one another with dignity and respect.

Sustainability Champion Influence

In our SBU, how important a role do the following individuals play in sustainable innovation...

- Product managers
- Senior managers
- Champions

To what extent do you agree or disagree with the following statements?

- Top managers in our SBU are frequently the most ardent champions of ideas related to sustainable innovation.
- Product champions wield considerable clout in our SBU.

Environmental Turbulence

To what extent do you agree or disagree with the following statements about the role of technology?

- The technology in our business is changing rapidly.
- Technological changes provide big opportunities in our business.
- It is very difficult to forecast where the technology in our business will be in the next five years.
- A large number of new product ideas in our business have been made possible through technological breakthroughs.
- Technological developments in our business are rather minor.

To what extent do you agree or disagree with the following statements about your customers?

- In our kind of business, customers' product preferences change quite a bit over time.
- Our customers tend to look for new products all the time.
- We are witnessing demand for our products and services from customers who never bought them before.
- New customers tend to have product-related needs that are different from those of our existing customers.
- We cater to much the same customers that we used to in the past.

Triple Bottom Line Performance

Please compare your entire organization's financial performance over the last two years relative to your closest competitors, in terms of...

- Return on investment
- Profitability
- Market share
- Sales
- Customer satisfaction

Please compare your entire organization's environmental performance over the last two years relative to your closest competitors, in terms of...

- providing products or services that have a less environmentally harmful impact than in previous years
- providing products or services with less environmentally damaging inputs than in previous years
- reducing or eliminating environmentally harmful processes

Please compare your entire organization's social performance over the last two years relative to your closest competitors, in terms of enhancing...

- employee well-being, health, and safety
- community well-being, health, and safety
- the well-being of disenfranchised, or less fortunate, members of the community.
- access to resources and opportunities for all members of the community.

If you consider your SBU's sustainable innovation efforts over the past two years as a program, how would you describe the program's outcomes relative to your expectations?

- Return on Investment
- Profitability
- Sales
- Customer Satisfaction
- Product or Service Quality
- Providing products or services that have a less environmentally harmful impact than in previous years
- Providing products or services with less environmentally damaging inputs than in previous years
- Impact on employee well- being, health, and safety.
- Impact on the well-being of disenfranchised, or less fortunate, members of the community.
- Reduction or elimination of environmentally harmful processes
- Impact on community well-being, health, and safety

Market Orientation

To what extent do you agree with the following statements about your SBU?

- We constantly monitor our level of commitment and orientation to serving customer needs.
- Our business strategies are driven by our beliefs about how we can create greater value for our customers.
- Our strategy for competitive advantage is based on our understanding of customers needs.
- Our business objectives are driven primarily by customer satisfaction.
- We measure customer satisfaction systematically and frequently.
- We give close attention to after-sales service.

To what extent do you agree with the following statements about your SBU?

- Our salespeople regularly share information within our business concerning competitors' strategies.
- We rapidly respond to competitive actions that threaten us.
- Top management regularly discusses competitors' strengths and strategies.
- We target customers where we have an opportunity for competitive advantage.

To what extent do you agree with the following statements about your SBU?

- Our top managers from every function regularly visit our current and prospective customers.
- We freely communicate information about our successful and unsuccessful customer experiences across all business functions.
- All of our business functions (e.g., marketing/sales, manufacturing, R&D, finance/accounting, etc.) are integrated in serving the needs of our target markets.
- All of our managers understand how everyone in our business can contribute to creating customer value.
- We share resources with other business units.

Unlearning is the assessment and discard of existing organizational knowledge or routines that

are no longer relevant or useful. If applicable, please describe this process within your firm.

Final Demographic Info
Finally, please answer a few questions about yourself and your company.

In what areas has your SBU created sustainable innovations? [Check all that apply]

- Products
- Services
- Supply Chain
- Manufacturing
- Marketing
- Management
- Other:

What percentage of your SBU's product portfolio sales is from sustainable products, if any? [Write %]

What percentage of your SBU's service portfolio sales is from sustainable services, if any? [Write %]

What is your role in your SBU's sustainable innovation program? (Check one)

- Overseeing executive or manager
- Team member
- Other: (please specify)

What is your primary function in your SBU? (Check one)

- Marketing
- IT
- Manufacturing
- Product Development
- Procurement
- Finance
- Sales
- General Management
- Operations
- Business Development
- Other:

Is your company publicly traded?

- Yes
- No

What was your SBU's total sales volume in 2011: [input number]

How many people are employed in your SBU?

What primary industry is your SBU in? [Check one]

- Agriculture, Forestry, And Fishing
- Mining
- Construction
- Manufacturing
- Transportation, Communications, Electric, Gas, And Sanitary Services
- Wholesale Trade
- Retail Trade
- Finance, Insurance and Real Estate
- Services
- Public Administration
- Other:

What country is your SBU located?

If your SBU is in the U.S., please indicate the state.

How many years ago was your SBU established?

How many years have you been employed at your SBU?

What is the level of the position you hold? [Check one]

- Staff
- Manager
- Director
- Senior Management (Vice President or Above)
- Owner/CEO

What is your gender?

- Male
- Female

What is the highest level of education you've completed?
Less than High School
High School
Some College
College Degree
Master's Degree
Professional Degree (JD, MD)
Ph.D.

Please provide your name and email address if you would like to receive a copy of the results of this research and/or participate in a raffle to receive one of two $150 gift cards.

Would you like to participate in the raffle?

- Yes

- No

Would you like to receive the survey results?

- Yes
- No

Thank you very much for participating in this survey! Your

Appendix 3: Data Reduction Analyses

TABLE XVIII: PRINCIPLE COMPONENT ANALYSIS OF CUSTOMER SUSTAINABILITY CONCERN

Exploratory Factor Analysis	Component		
	1	2	3
How often do your SBU's targeted customers engage in the following activities? -Choose the environmentally friendly alternative product or service regardless of price	.800		
How often do your SBU's targeted customers engage in the following activities? -Choose the environmentally friendly alternative product or service if one of similar price is available	.746		
How often do your SBU's targeted customers engage in the following activities? -Investigate the environmental effects of products or services prior to purchase	.745		
How often do your SBU?s targeted customers engage in the following activities? -Try to discover the social effects of products and services prior to purchase	.530		
To what extent do your SBU's targeted customers believe the following: -Social equity is one of the most important issues facing society today		.851	
To what extent do your SBU's targeted customers believe the following: -Firms can be profitable while addressing social issues such as engaging in fair labor practices and helping the community		.814	
How often do your SBU?s targeted customers engage in the following activities? -Choose the socially friendly alternative product or service regardless of price		.637	
How often do your SBU's targeted customers engage in the following activities? -Choose the socially friendly alternative product or service if one of similar price is available		.611	
To what extent do your SBU's targeted customers believe each of the following: -Firms can be profitable while addressing environmental issues			.882
To what extent do your SBU's targeted customers believe each of the following: -Preservation of the environment is one of the most important issues facing society today			.758

Extraction Method: Principle Component Analysis
a. Rotation converged in 8 iterations.

TABLE XIX: CONFIRMATORY FACTOR ANALYSIS OF CUSTOMER SUSTAINABILITY CONCERN

Confirmatory Factor Analysis	
	Factor Loading
How often do your SBU's targeted customers engage in the following activities? -Choose the environmentally friendly alternative product or service regardless of price	NA
How often do your SBU's targeted customers engage in the following activities? -Choose the environmentally friendly alternative product or service if one of similar price is available	.75
How often do your SBU's targeted customers engage in the following activities? -Investigate the environmental effects of products or services prior to purchase	.83
How often do your SBU's targeted customers engage in the following activities? -Try to discover the social effects of products and services prior to purchase	.72
To what extent do your SBU's targeted customers believe the following: -Social equity is one of the most important issues facing society today	.64
To what extent do your SBU's targeted customers believe the following: -Firms can be profitable while addressing social issues such as engaging in fair labor practices and helping the community	NA
How often do your SBU's targeted customers engage in the following activities? -Choose the socially friendly alternative product or service regardless of price	.74
How often do your SBU's targeted customers engage in the following activities? -Choose the socially friendly alternative product or service if one of similar price is available	.83
To what extent do your SBU's targeted customers believe each of the following: -Firms can be profitable while addressing environmental issues	.71
To what extent do your SBU's targeted customers believe each of the following: -Preservation of the environment is one of the most important issues facing society today	.87

TABLE XX: PRINCIPLE COMPONENT ANALYSIS OF SUSTAINABLE MARKET ORIENTATION

Exploratory Factor Analysis	Component 1
In our SBU we consider and balance what our customers need with the...	
social concerns of other stakeholders	.876
environmental concerns of other stakeholders (such as shareholders, governments, the public)	.858
economic concerns of other stakeholders	.774
In our SBU we strive to meet the needs of our customers while considering the...	
environmental needs of other stakeholders (such as shareholders, governments, the public)	.776
social needs of other stakeholders	.857
economic needs of other stakeholders	.707

Extraction Method: Principal Component Analysis

a. 1 components extracted

TABLE XXI: CONFIRMATORY FACTOR ANALYSIS AND RELIABILTY ANALYSIS OF SUSTAINABLE MARKET ORIENTATION

Confirmatory Factor Analysis and Reliability Analysis		
	Factor Loading	α
		.885
In our SBU we consider and balance what our customers need with the...		
social concerns of other stakeholders	.97	
environmental concerns of other stakeholders (such as shareholders, governments, the public)	.79	
economic concerns of other stakeholders	.69	
In our SBU we strive to meet the needs of our customers while considering the...		
environmental needs of other stakeholders (such as shareholders, governments, the public)	NA	
social needs of other stakeholders	.80	
economic needs of other stakeholders	NA	

TABLE XXII: PRINCIPLE COMPONENT ANALYSIS OF INTRA-ORGANIZATIONAL TRUST

Exploratory Factor Analysis	Component	
	1	2
Employees throughout this SBU…		
Enjoy and like one another	.875	
Invest emotionally in their work relationships	.857	
Deal with each other fairly and justly	.826	
Are close enough to freely share ideas, thoughts, and feelings	.809	
Treat one another with dignity and respect	.782	
Do what is right rather than what is expedient	.755	
Really care and are concerned for each other	.688	
Are competent at their jobs		.901
Are skilled and knowledgeable to do their work		.865
Uphold professional work values		.816

Extraction Method: Principal Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 3 iterations

TABLE XXIII: CONFIRMATORY FACTOR ANALYSIS OF INTRA-ORGANIZATIONAL TRUST

Confirmatory Factor Analysis	Factor Loading
Employees throughout this SBU…	
Enjoy and like one another	.87
Invest emotionally in their work relationships	.91
Deal with each other fairly and justly	.87
Are close enough to freely share ideas, thoughts, and feelings	.83
Treat one another with dignity and respect	.83
Do what is right rather than what is expedient	.84
Really care and are concerned for each other	.78
Are competent at their jobs	.92
Are skilled and knowledgeable to do their work	.89
Uphold professional work values	.88

TABLE XXIV: PRINCIPLE COMPONENT ANALYSIS OF SUSTAINABILITY CHAMPION INFLUENCE

Exploratory Factor Analysis	Component 1
In your SBU, how important a role do the following individuals play in sustainable innovation…	
Product Managers	.755
Senior Managers	.744
Champions	.701
To what extent do you agree or disagree with the following statements?	
Top managers in our SBU are frequently the most ardent champions of ideas related to sustainable innovation.	.728
Product champions wield considerable clout in our SBU.	.806

Extraction Method: Principle Component Analysis

TABLE XXV: CONFIRMATORY FACTOR ANALYSIS AND RELIABILITY ANALYSIS OF SUSTAINABILITY CHAMPION INFLUENCE

Confirmatory Factor Analysis and Reliability Analysis	Factor Loading	α
In your SBU, how important a role do the following individuals play in sustainable innovation…		.783
Product Managers	.68	
Senior Managers	.63	
Champions	.62	
To what extent do you agree or disagree with the following statements?		
Top managers in our SBU are frequently the most ardent champions of ideas related to sustainable innovation.	.65	
Product champions wield considerable clout in our SBU.	.76	

TABLE XXVI: PRINCIPLE COMPONENT ANALYSIS OF ORGANIZATIONAL LEARNING

Exploratory Factor Analysis	Component 1	Component 2
When working on a sustainability innovation program, we in the SBU…		
visit other companies to improve our knowledge of sustainability	.788	
attend all sorts of expert presentations to improve our knowledge of sustainability.	.877	
attend training programs to improve our knowledge of sustainability.	.870	
When working on a sustainability innovation program, we in the SBU...		
exchange newly acquired information with one another to improve our knowledge of sustainability.		.766
share newly acquired information about sustainability with top managers.		.779
When working on a sustainability innovation program, we in the SBU...		
encourage teamwork, team decision making, and internal communication		.708
resolve conflicts with one another		.781
In our SBU we accumulate extensive knowledge of, and experience in,...		
developing new sustainable products		.685
formulating new sustainable processes		.785

Extraction Method: Principle Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 3 iterations

TABLE XXVII: CONFIRMATORY FACTOR ANALYSIS OF ORGANIZATIONAL LEARNING

Confirmatory Factor Analysis	Factor Loading
When working on a sustainability innovation program, we in the SBU…	
visit other companies to improve our knowledge of sustainability	.66
attend all sorts of expert presentations to improve our knowledge of sustainability.	.93
attend training programs to improve our knowledge of sustainability.	.89
When working on a sustainability innovation program, we in the SBU...	
exchange newly acquired information with one another to improve our knowledge of sustainability.	.84
share newly acquired information about sustainability with top managers.	.85
When working on a sustainability innovation program, we in the SBU...	
encourage teamwork, team decision making, and internal communication	.73
resolve conflicts with one another	.67
In our SBU we accumulate extensive knowledge of, and experience in,...	
developing new sustainable products	.65
formulating new sustainable processes	.74

TABLE XXVIII: PRINCIPLE COMPONENT ANALYSIS OF ORGANIZATIONAL UNLEARNING

Principle Component Analysis	Component	
	1	2
When working on a sustainable innovation program, we in the SBU...		
assess our knowledge and routines to determine if they are relevant.	.760	
evaluate our knowledge and routines to see if they are useful.	.801	
discard existing knowledge and routines that do not apply.	.712	
are willing to set aside old ways of doing things.	.819	
When working on a sustainable innovation program, individuals in our SBU...		
find that old habits are so difficult to break that it sometimes requires a change in personnel to achieve.		.927
are willing to set aside the old way of doing business to adapt.	.831	
evaluate their own knowledge and routines to see if they are useful.	.839	
discard their own existing knowledge and routines that do not apply.	.789	

Extraction Method: Principle Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

TABLE XXIX: CONFIRMATORY FACTOR ANALYSIS AND RELIABILITY ANALYSIS OF ORGANIZATIONAL UNLEARNING

Confirmatory Factor Analysis and Reliability Analysis	Factor Loading	α
When working on a sustainable innovation program, we in the SBU...		.901
assess our knowledge and routines to determine if they are relevant.	.64	
evaluate our knowledge and routines to see if they are useful.	.70	
discard existing knowledge and routines that do not apply.	.64	
are willing to set aside old ways of doing things.	.81	
When working on a sustainable innovation program, individuals in our SBU...		
find that old habits are so difficult to break that it sometimes requires a change in personnel to achieve.	NA	
are willing to set aside the old way of doing business to adapt.	.84	
evaluate their own knowledge and routines to see if they are useful.	.81	
discard their own existing knowledge and routines that do not apply.	.76	

TABLE XXX: PRINCIPLE COMPONENT ANALYSIS OF SUSTAINABLE INNOVATION

	Component 1
To what extent do you agree or disagree with the following statements: Over the past two years, our SBU has done a good job…	
generating sustainable innovation processes	.897
designing sustainable innovation processes	.892
implementing sustainable innovation processes	.905
generating sustainable innovation products and services	.887
accepting sustainable innovation products and services	.861
implementing sustainable innovation products and services	.901

Extraction Method: Principal Component Analysis

a. 1 components extracted

TABLE XXXI: CONFIRMATORY FACTOR ANALYSIS AND RELIABILITY ANALYSIS OF SUSTAINABLE INNOVATION

Confirmatory Factor Analysis and Reliability Analysis	Factor Loading	α
To what extent do you agree or disagree with the following statements: Over the past two years, our SBU has done a good job…		.948
generating sustainable innovation processes	.93	
designing sustainable innovation processes	.92	
implementing sustainable innovation processes	.90	
generating sustainable innovation products and services	.79	
accepting sustainable innovation products and services	.77	
implementing sustainable innovation products and services	.80	

TABLE XXXII: PRINCIPLE COMPONENT ANALYSIS OF ENVIRONMENTAL TURBULENCE

Principle Component Analysis

	Component		
	1	2	3
To what extent do you agree or disagree with the following statements about the role of technology?			
The technology in our business is changing rapidly.	.776		
Technological changes provide big opportunities in our business.	.815		
A large number of new product ideas in our business have been made possible through technological breakthroughs.	.776		
Technological developments in our business are rather minor (reverse coded).	-.722		
It is very difficult to forecast where the technology in our business will be in the next five years.	.445		
To what extent do you agree or disagree with the following statements about your customers?			
In our kind of business, customers' product preferences change quite a bit over time.		.794	
Our customers tend to look for new products all the time.		.732	
We cater to much the same customers that we used to in the past (reverse coded).			-.829
We are witnessing demand for our products and services from customers who never bought them before.			.752

Extraction Method: Principle Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 5 iterations

TABLE XXXIII: CONFIRMATORY FACTOR ANALYSIS OF ENVIRONMENTAL TURBULENCE

Confirmatory Factor Analysis	Factor Loading
To what extent do you agree or disagree with the following statements about the role of technology?	
The technology in our business is changing rapidly.	.79
Technological changes provide big opportunities in our business.	.72
A large number of new product ideas in our business have been made possible through technological breakthroughs.	.73
Technological developments in our business are rather minor.	NA
It is very difficult to forecast where the technology in our business will be in the next five years.	NA
To what extent do you agree or disagree with the following statements about your customers?	
In our kind of business, customers' product preferences change quite a bit over time.	.65
Our customers tend to look for new products all the time.	.71
We cater to much the same customers that we used to in the past.	NA
We are witnessing demand for our products and services from customers who never bought them before.	NA

TABLE XXXIV: PRINCIPLE COMPONENT ANALYSIS OF TRIPLE BOTTOM LINE (PROGRAM) PERFORMANCE

Principle Component Analysis	Component	
	1	2
If you consider your SBU's sustainable innovation efforts over the past two years as a program, how would you describe your program's outcomes relative to your expectations?		
Return on Investment	.897	
Profitability	.922	
Sales	.860	
Customer Satisfaction		.572
Product or Service Quality		.583
Providing products or services that have a less environmentally harmful impact than in previous years		.845
Providing products or services with less environmentally inputs than in previous years		.836
Impact on employee well-being, health and safety		.781
Impact on the well-being of disenfranchised or less fortunate, members of the community		.782
Reduction or elimination of environmentally harmful processes		.849
Impact on community well-being, health, and safety		.852

Extraction Method: Principle Component Analysis
Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 3 iterations

TABLE XXXV: CONFIRMATORY FACTOR ANALYSIS OF TRIPLE BOTTOM LINE (PROGRAM) PERFORMANCE

Confirmatory Factor Analysis	Factor Loading
If you consider your SBU's sustainable innovation efforts over the past two years as a program, how would you describe your program's outcomes relative to your expectations?	
Return on Investment	.94
Profitability	.98
Sales	.80
If you consider your SBU's sustainable innovation efforts over the past two years as a program, how would you describe your program's outcomes relative to your expectations?	
Customer Satisfaction	.65
Product or Service Quality	.70
Providing products or services that have a less environmentally harmful impact than in previous years	.84
Providing products or services with less environmentally inputs than in previous years	.82
Impact on employee well-being, health and safety	.79
Impact on the well-being of disenfranchised or less fortunate, members of the community	.77
Reduction or elimination of environmentally harmful processes	.88
Impact on community well-being, health, and safety	.87

Appendix 4: Reliability and Validity Tests

TABLE XXXVI: INDEPENDENT VARIABLE MODEL CONVERGENT VALIDITY AND DISCRIMINANT VALIDITY

	CR	AVE	MSV	ASV
Trust	0.867	0.770	0.318	0.189
Sustainable Market Orientation	0.891	0.674	0.271	0.206
Champion	0.803	0.450	0.333	0.307
Customer Sustainability Concern	0.841	0.644	0.333	0.217

TABLE XXXVII: INDEPENDENT VARIABLE MODEL CORRELATIONS AND DISCRIMINANT VALIDITY TEST

	Trust	Sustainable Market Orientation	Champion	Customer Sustainability Concern
Trust	0.877			
Sustainable Market Orientation	0.371	0.821		
Champion	0.564	0.521	0.671	
Customer Sustainability Concern	0.332	0.456	0.577	0.802

Note: Diagonal values are the square roots of the AVEs.

TABLE XXXVIII: DEPENDENT VARIABLE MODEL CONVERGENT VALIDITY AND DISCRIMINANT VALIDITY

	CR	AVE	MSV	ASV
Learning	0.815	0.698	0.630	0.324
Sustainable Innovation	0.941	0.729	0.630	0.316
Unlearning	0.897	0.558	0.497	0.308
Environmental Turbulence	0.732	0.607	0.089	0.026
Triple Bottom Line	0.778	0.654	0.169	0.111

TABLE XXXIX: DEPENDENT VARIABLE MODEL CORRELATIONS AND DISCRIMINANT VALIDITY TEST

	Learning	Sustainable Innovation	Unlearning	Environmental Turbulence	Triple Bottom Line
Learning	0.835				
Sustainable Innovation	0.794	0.854			
Unlearning	0.704	0.705	0.747		
Environmental Turbulence	-0.037	0.119	0.298	0.779	
Triple Bottom Line	0.411	0.352	0.388	0.015	0.809

Note: Diagonal values are the square roots of the AVEs.

Appendix 5: Correlation Analysis

TABLE XXXX: CORRELATION TABLE

	Champ	CSC	Turb	Innov	Learn	SMO	TBL	Trust	Unlearn
Champ	1								
CSC	.465	1							
Turb	.124	.157	1						
Innov	.591	.453	.141	1					
Learn	.625	.454	.077	.708	1				
SMO	.468	.470	.009	.491	.540	1			
TBL	.245	.175	.039	.261	.308	.151	1		
Trust	.481	.293	.012	.394	.528	.345	.295	1	
Unlearn	.527	.447	.250	.646	.676	.417	.255	.490	1

REFERENCES

Aaker, David A. (1988), *Strategic Market Management,* 2nd ed. New York: John Wiley & Sons, Inc.

Achiladelis, B., Jervis, P., and Robertson, A. (1971), *A Study of Success and Failure in Industrial Innovation.* Sussex, UK: University of Sussex Press.

Agarwal, Rajshree and Barry L. Bayus (2002), "The Market Evolution and Sales Takeoff of Product Innovations," *Management Science,* Vol. 48, No. 8, 1024-1041.

Aguilera, Ruth V., Deborah E. Rupp, Cynthia A. Williams, and Jyoti Ganapathi (2007), "Putting the S Back in Corporate Social Responsibility: A Multilevel Theory of Social Change in Organizations, *Academy of Management Review,* Vol. 32, No. 3, 836-863.

Ahuja, G. and C.M. Lampert (2001), "Entrepreneurship in the Large Corporation: A Longitudinal Study of How Established Firms Create Breakthrough Inventions," *Strategic Management Journal,* 22(6-7), 521-543.

Akgün, Ali E., John C. Byrne, Gary S. Lynn, and Halit Keskin (2007), "Organizational unlearning as changes in beliefs and routines in organizations," *Journal of Organizational Change Management,* Vol. 20, No. 6, 794-812.

Akgün, Ali E., Gary S. Lynn, and John C. Byrne (2006), "Antecedents and Consequences of Unlearning in New Product Development Teams," *Journal of Product Innovation Management,* Vol. 23, 73-88.

Argyris, Chris and Donald A. Schon (1978). *Organizational Learning: A Theory of Action Perspective.* Reading, Massachusetts: Addison-Wesley Publishing Company.

Argyris, Chris and Donald A. Schon (1996). *Organizational Learning II.* Reading, Massachusetts: Addison-Wesley Publishing Company.

Ayers, Doug, Robert Dahlstrom, and Steven J. Skinner (1997), "An Exploratory Investigation of Organizational Antecedents to New Product Success," *Journal of Marketing Research,* 34 (February): 107-116.

Ayuso, Silvia, Miguel Angel Rodriguez, and Joan Enric Ricart (2006), "Responsible Competitiveness at the "micro" Level of the Firm. Using Stakeholder Dialogue as a Source for New Ideas: A Dynamic Capability Underlying Sustainable Innovation," *Corporate Governance,* Vol. 6, No. 4, 475-490.

Bagozzi, Richard P. and Youjae Yi (1990), "Assessing Method Variance in Multitrait-Multimethod Matrices: The Case of Self-Reported Effect and Perceptions at Work," *Journal of Applied Psychology,* Vol. 75, 547-560.

Bagozzi, Richard P., Youjae Yi, and Lynn W. Phillips (1991), "Assessing Construct Validity in Organizational Research," *Administrative Science Quarterly,* 36 (3), 421-458.

Bannerjee, S.B. (2001), "Managerial Perceptions of Corporate Environmentalism: Interpretations from Industry and Strategic Implications for Organizations," *Journal of Management Studies,* Vol. 38, No. 4, 489-513.

Bansal, Pratima (2005), "Evolving Sustainably: A Longitudinal Study of Corporate Sustainable Development," *Strategic Management Journal,* Vol. 26, No. 3, 197-218.

Barczak, Gloria, Fareena Sultan, and Erik Jan Hultink (2007), "Determinants of IT Usage and New Product Performance," *Journal of Product Innovation Management,* 24, 600-613.

Barkema, Harry G. and Freek Vermeulen (1998), "International Expansion Through Start-Up or Acquisition: A Learning Perspective," *Academy of Management Journal,* Vol. 41, No. 1, 7-26.

Barry, John (2002), "Sustainability" in John Barry and Frankland, E. Gene (Eds), *International Encyclopedia of Environmental Politics,* Routledge, New York, NY.

Baumann, H., F. Boons, and A. Bragd (2002), "Mapping the Green Product Development Field: Engineering, Policy and Business Perspectives," *Journal of Cleaner Production,* Vol. 10, No. 5, 409-425.

Beath, C.M. (1991), "Supporting the Information Technology Champion," *MIS Quarterly,* Vol. 15, No. 3, 355-371.

Berchicci, Luca and Wynand Bodewes (2005), "Bridging Environmental Issues with New Product Development," *Business Strategy and the Environment,* Vol. 14, No. 5, 272-285.

Berens, Guido, Cees B.M. van Riel, and Gerrit H. van Bruggen (2005), "Corporate Associations and Consumer Product Responses: The Moderating Role of Corporate Brand Dominance," *Journal of Marketing,* Vol. 69, No. 3, 35-48.

Bohlen, Greg, Bodo B. Schlegelmilch, and Adamantios Diamantopoulos (1993), "Measuring Ecological Concern: A Multi-Construct Perspective," *Journal of Marketing Management,* Vol. 9, No. 4, 415-430.

Boyd, Chris (2001). Sustainability is Good Business. OECD Observer, September, Vol. 35. http://www.oecdobserver.org/news/printpage.php/aid/546/Sustainability_is_good_business.html.

Brown, Tom J. and Peter A. Dacin (1997), "The Company and the Product: Corporate Associations and Consumer Product Responses," *Journal of Marketing,* Vol. 61, No. 1, 68-84.

Brown, John Seely and Paul Duguid (1991), "Organizational Learning and Communities-of-Practice: Toward a Unified View of Working, Learning, and Innovation," *Organization Science,* 2(1), 40-57.

Burns, Tom and George Macpherson Stalker (1961), *The management of innovation,* London: Tavistock Publications.

Byrch, Christine, Kate Kearins, Markus Milne, Richard Morgan (2007), "Sustainable What? A Cognitive Approach to Understanding Sustainable Development," *Qualitative Research in Accounting and Management,* Volume 4, Issue 1, 26-52.

Campbell, Donald T. and Donald W. Fiske (1959), "Convergent and Discriminant Validation by the Multitrait–Multimethod Matrix," *Psychological Bulletin, 56,* 81–105.

Cano, Cynthia Rodriguez, Francois A. Carrillat, and Fernando Jaramillo (2004), "A meta-analysis of the relationship between market orientation and business performance: evidence from five continents," *International Journal of Research in Marketing,* Vol. 21, No. 2, 179-200.

Carraher, Shawn M., M. Ronald Buckley, and Charles E. Carraher (2008), "Research Challenges in Sustainable Strategic Management: Change and Sustainability," *International Journal of Sustainable Strategic Management,* 1(1), 2-15.

Carter, Craig R. and Marianne M. Jennings (2004), "The Role of Purchasing in Corporate Social Responsibility: A Structural Equation Analysis," *Journal of Business Logistics,* Vol. 25, No. 1, 145-186.

Chabowski, Brian R., Jeannette A. Mena, and Tracy L. Gonzalez-Padron (2011), "The Structure of Sustainability Research in Marketing, 1958–2008: A Basis for Future Research Opportunities," *Journal of the Academy of Marketing Science*, Vol. 39, No. 1, 55–70.

Chandy, Rajesh K. and Gerard J. Tellis (1998), "Organizing for Radical Product Innovation: The Overlooked Role of Willingness to Cannibalize," *Journal of Marketing Research*, Vol. 35, November, 474-487.

Chen, Yu-Shan (2008), "The Driver of Green Innovation and Green Image," *Journal of Business Ethics,* Volume 81, Number 3, 531-543.

Child, John and Andre P. Czegledy (1996), "Managerial Learning in the Transformation of Eastern Europe: Some Key Issues," *Organization Studies,* vol. 17, No. 2, 167-179.

Chin, Wynne W. (2000), "Partial Least Squares For Researchers: An overview and presentation of recent advances using the PLS approach," accessed via http://disc-nt.cba.uh.edu/chin/icis2000plstalk.pdf on May 30, 2012.

Chowdhury, S. (2005) "The Role of Affect- and Cognition-Based Trust in Complex Knowledge Sharing," *Journal of Managerial Issues,* Vol. 17, No. 3, 310-326.

Closs, David J., Cheri Speier, and Nathan Meacham (2011), "Sustainability to Support End-to-End Value Chains: The Role of Supply Chain Management," *Journal of the Academy of Marketing Science,* Vol. 39, No. 1, 101-116.

Cohen, Jacob (1988), *Statistical Power Analysis for the Behavioral Sciences* (2nd Edition). Hillsdale, NJ: Lawrence Erlbaum Associates.

Cohen, Michael D. (1991), "Individual Learning and Organizational Routine: Emerging Connections," *Organization Science,* 2 (February), 135-139.

Colby, Michael (1991) "Environmental Management in Development: The Evolution of Paradigms, *Ecological Economics,* Vol. 3, 193-213.

Connelly, Brian L., David J. Ketchen Jr., Stanley F. Slater (2011), "Toward a 'theoretical toolbox' for Sustainability Research in Marketing, *Journal of the Academy of Marketing Science,* Volume 39, No. 1, 86-100.

Coutu, Diane L. (2002), "The Anxiety of Learning," *Harvard Business Review,* (March), 100-106.

Crittendon, Victoria L., William F. Crittendon, Linda K. Ferrell, O.C. Ferrell, and Christopher C. Pinney (2011), "Market-Oriented Sustainability: A Conceptual Framework and Propositions," *Journal of the Academy of Marketing Science,* Volume 39, No. 1, 71-85.

Cronin Jr., J. Joseph, Jeffery S. Smith, Mark R. Gleim, Edward Ramirez, and Jennifer Dawn Martinez (2011), "Green Marketing Strategies: An Examination of Stakeholders and the Opportunities They Present," *Journal of the Academy of Marketing Science,* Vol. 39, No. 1, 158-174.

Cyert, Richard M. and James G. March (1963), *A Behavioral Theory of the Firm*. Englewood Cliffs, NJ: Prentice-Hall Inc.

Daft, Richard L. (1978), "A Dual-Core Model of Organizational Innovation," *Academy of Management Journal,* Vol. 21, No. 2, 193-210.

Daft, Richard L. and George P. Huber, (1987), "How Organizations Learn: A Communications Framework." In *Research in the Sociology of Organizations.* Eds. Nancy Ditomaso and Samuel B. Bacharaeh. Greenwich, CT: JAI, 1-36.

Daft, Richard L. and Karl E. Weick (1984), "Toward a Model of Organizations as Interpretation Systems," *Academy of Management Review, 9* (April), 284-95.

Dahlsrud, Alexander (2008), "How Corporate Social Responsibility is Defined: An Analysis of 37 definitions," *Corporate Social Responsibility and Environmental Management*, Vol. 15, 1–13.

Damanpour, Fariborz (1991), "Organizational Innovation: A Meta-Analysis of Effects of Determinants and Moderators," *Academy of Management Journal,* 34(3), 555-590.

Danjelico, Rosa Maria and Devashish Pujari (2010), "Mainstreaming Green Product Innovation: Why and How Companies Integrate Environmental Sustainability," *Journal of Business Ethics,* Vol. 95, 471-486.

Daub, Claus-Heinrich and Rudolf Ergenzinger (2005), "Enabling Sustainable Management Through a New Multi-Disciplinary Concept of Customer Satisfaction," *European Journal of Marketing,* Vol. 39(9/10), 998–1012.

Davenport, Thomas H. (1994), *Process Innovation: Reengineering Work Through Information Technology.* Harvard Business School, Boston, MA.

Day, George S. (1994) "The Capabilities of Market-Driven Organizations," *Journal of Marketing* 58 (October): 37-52.

deGeus, Arie P. (1988), "Planning as Learning," *Harvard Business Review*, 66 (March/April), 70-74.

Deshpande, Rohit, John U. Farley, and Frederick E. Webster Jr. (1993), "Corporate Culture, Customer Orientation, and Innovativeness in Japanese Firms: A Quadrad Analysis," *Journal of Marketing,* Vol. 57, No. 1, 23-27.

Deshpande, Rohit and Frederick E. Webster (1989), "Organizational Culture and Marketing: Defining the Research Agenda," *Journal of Marketing,* 53 (January): 3-15.

Diamantopoulos, Adamantios, Bodo B. Schlegelmilch, Rudolf R. Sinkovics, and Greg M. Bohlen (2003), "Can Socio-Demographics Still Play a Role in Profiling Green Consumers? A Review of the Evidence and an Empirical Investigation," *Journal of Business Research*, Vol. 56, No. 6, 465-480.

Dickson, Peter Reid (1992), "Toward a General Theory of Competitive Rationality," *Journal of Marketing,* 56 (January), 69-83.

Dixon, Nancy M. (1992), "Organizational Learning: A Review of the Literature With Implications for HRD Professionals." *Human Resource Development Quarterly* 3 (Spring): 29-49.

Doering Don S., Amy Cassara, Christian Layke, Janet Ranganathan, Carmen Revenga, D. Tunstall, and W. Vanasselt (2002) *Tomorrow's Markets: Global Trends and their Implication for Business.* World Resources Institute: Baltimore, MD.

Dougherty, Deborah (1992), "Interpretive Barriers to Successful Product Innovation in Large Firms," *Organization Science,* Vol. 3, No. 2, 179-202.

Drucker, Peter F. (2006), *Innovation and Entrepreneurship.* Collins, New York.

Drumwright, Minette E. (1994), "Socially Responsible Organizational Buying: Environmental Concern as a Non-Economic Buying Criterion," *Journal of Marketing,* Vol. 58(3), 1-19.

Dryzek, John (1997), *The Politics of the Earth. Environmental Discourses,* Oxford University Press, New York, NY.

Easterby-Smith, Mark (1997), "Disciplines of Organizational Learning: Contributions and Critiques, *Human Relations,* Vol. 50, No. 9, 1085-1113.

Easterby-Smith, Mark, Mary Crossan, Davide Nicolini (2000), "Organizational Learning: Debates Past, Present and Future," *Journal of Management Studies,* 37:6, 783-796.

Eisenhardt, Kathleen M. (1989), "Making Fast Strategic Decisions in High-Velocity Markets," *Academy of Management Journal*, 32 (September): 543-576.

Eisenhardt, Kathleen M. and Jeffrey A. Martin (2000), "Dynamic Capabilities: What Are They?," *Strategic Management Journal,* Vol. 21: 1105-1121.

Elkington John (1997), *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. New Society: Stony Creek, CT.

Engardio Pete, Kerry Capell, John Carey, and Kenji Hall (2007), "Beyond the Green Corporation: Imagine a World in Which Eco-Friendly and Socially Responsible Practices Actually Help a Company's Bottom Line," *Businessweek,* January 29, 50.

Epstein, Marc J. and Marie-Josée Roy (2003), "Making the Business Case for Sustainability: Linking Social and Environmental Actions to Financial Performance," *Journal of Corporate Citizenship,* Vol. 9, 79-96.

Esslinger, Hartmut (2011), "Sustainable Design: Beyond the Innovation-Driven Business Model," *Journal of Product Innovation Management,* Vol. 28, 401-404.

Ettlie, John E., William P. Bridges, and Robert D. O'Keefe (1984), "Organization Strategy and Structural Differences for Radical vs Incremental Innovations," *Management Science,* Vol. 30, No. 6, 682-695.

Ferrell, O.C., Tracy L. Gonzalez-Padron, G. Tomas M. Hult, and Isabelle Maignan (2010), "From Market Orientation to Stakeholder Orientation," *Journal of Public Policy and Marketing,* Vol. 29, No. 1, 93-96.

Fiol, C. Marlene and Marjorie A. Lyles (1985), "Organizational Learning," *Academy of Management Review*, Vol. 10, No. 4, 803-813.

Flaherty, Karen. E., and James M. Pappas. (2000), "The Role of Trust in Salesperson-Sales Manager Relationships," *Journal of Personal Selling and Sales Management,* Vol. 20, No. 4, 271-218.

Flannery, Brenda L. and Douglas R. May (2000), "Environmental Ethical Decision Making in the U.S. Metal-Finishing Industry," *Academy of Management Journal,* Vol. 29, No. 1, 642-662.

Fornell, Claes and David F. Larcker (1981), "Evaluating Structural Equation Models with Unobservable Variables and Measurement Error," *Journal of Marketing Research,* Vol. 18 (February), 39-50.

Fort, Timothy L (2007), "The Corporate Contribution to One Planet Living in Global Peace and Security," *Journal of Corporate Citizenship,* Vol. 26, 20-24.

Frambach, Ruud T. and Harry G. Barkema (1998), "Adoption of a Service Innovation in the Business Market," *Journal of Business Research,* Vol. 41, No. 2, 161-174.

Frost, Peter J. and Carolyn P. Egri (1991), "Influence on Political Action on Innovation, Part II," *Leadership Organizational Development Journal* Vol. 11, No. 2, 4-12.

Garvin, David A. (1993), "Building a Learning Organization," *Harvard Business Review,* Vol. 71 (July/August).

Gatignon, Hubert and Jean-Marc Xuereb (1997), "Strategic Orientation of the Firm and New Product Performance," *Journal of Marketing Research,* Vol. 34, No. 1, 77-90.

Gatignon, Hubert, Michael L. Tushman, Wendy Smith, and Philip Anderson (2002), "A Structural Approach to Assessing Innovation: Construct Development of Innovation Locus, Type, and Characteristics," *Management Science,* Vol. 48, No. 9, 1103-1122.

Gladwin, Thomas N., James J. Kennelly, and Tara-Shelomith Krause (1995), "Shifting Paradigms for Sustainable Development: Implications for Management Theory and Research," *Academy of Management Review,* Vol. 20, No. 4, 874–907.

Glazer, Rashi (1991), "Marketing in an Information-Intensive Environment: Strategic Implications of Knowledge as an Asset," *Journal of Marketing,* Vol. 55 (October), 1-19.

Glazer, Rashi and Allen M. Weiss (1993), "Marketing in Turbulent Environments: Decision Processes and the Time-Sensitivity for Information," *Journal of Marketing Research,* Vol. 30 (November), 509-521.

Global Reporting Initiative (2011). GRI Content Index Template. Accessed via http://www.globalreporting.org/NR/rdonlyres/0516D290-20EE-45B3-9D18-3BC370C45319/0/GRIContentIndex.xls

Govindarajan, Vijay and Praveen K. Kopalle (2006), "Disruptiveness of Innovations: Measurement and an Assessment of Reliability and Validity," *Strategic Management Journal,* Vol. 27, 189-199.

Grant, Robert M. (1996), "Toward a Knowledge-Based Theory of the Firm," *Strategic Management Journal,* Vol. 17 (Winter), 109-122.

Grover, Varun (1993), "An Empirically Derived Model for the Adoption of Customer-Based Interorganizational Systems," *Decision Sciences,* Vol. 24, No. 3, 603-649.

Gupta, Anil K., Paul E. Tesluk, and M. Susan Taylor (2007), "Innovation At and Across Multiple Levels of Analysis," *Organization Science,* Vol. 18, No. 6, 885-897.

Haanaes, Knut, Balu Balagopal, David Arthur, Ming Teck Kong, Ingrid Velken, Nina Kruschwitzk and Michael S. Hopkins (2012), "First Look: The Second Annual Sustainability and Innovation Survey", *MIT Sloan Management Review,* Vol. 52, No. 2, 77-83.

Hamel, Gary and C. K. Prahalad, (1994) *Competing for the Future,* Boston, MA: Harvard Business School Press.

Handfield, Robert B., Steve V. Walton, Lisa K. Seegers and Steven A. Melnyk (1997), "Green Value Chain Practices in the Furniture Industry," *Journal of Operations Management,* Vol. 15, No. 4, 11-13.

Hansen, Erik G., Friedrich Grosse-Dunker, and Ralf Reichwalk (2009), "Sustainability Innovation Cube—A Framework to Evaluate Sustainability-Oriented Innovations," *International Journal of Innovation Management,* Vol. 13, No. 4, 683-713.

Hanvanich, Sangphet, K. Sivakumar, and G. Tomas M. Hult (2006), "The Relationship of Learning and Memory with Organizational Performance: The Moderating Role of Turbulence," *Journal of the Academy of Marketing Science,* Vol. 34, No. 4, 600-612.

Hart, Stuart (2007), *Capitalism at the Crossroads: Aligning Business, Earth and Humanity.* Pearson Education publishing as Wharton School Publishing, Upper Saddle River, NJ.

Hauschildt, Jürgen and Edgar Kirchmann (2001), "Teamwork for Innovation—The "Troika" of Promoters," *R&D Management,* Vol. 31, No. 1, 41-49.

Hayes, Robert H., Steven C. Wheelwright and Kim B. Clark (1988), *Dynamic Manufacturing: Creating the Learning Organization.* New York: Free Press.

Hedberg, Bo (1981), "How organizations learn and unlearn," in *Handbook of Organizational Design,* Vol 1., P.C. Nystrom & W.H. Starbuck (Eds). Oxford: Oxford University Press: 3-27.

Henseler, Jorg, Christian M. Ringle, and Rudolf R. Sinkovics (2009), "The Use of Partial Least Squares in Path Modeling in International Modeling," *Advances in International Marketing,* Vol. 20, 277-319.

Hoffman, Andrew J., and M. H. Bazerman (2007), "Changing Practice on Sustainability: Understanding and Overcoming the Organizational and Psychological Barriers to Action" in: S. Sharma , M. Starik and B. Husted (Eds), *Organizations and the Sustainability Mosaic: Crafting Long-Term Ecological and Societal Solutions.* Northampton: Edward Elger.

Hosmer, L. T. (1995), "Trust: The Connecting Link Between Organizational Theory and Philosophical Ethics," *Academy of Management Review,* Vol. 22 (April), 379-403.

Howell, Jane M. and Christopher A. Higgins (1990), "Champions of Technological Innovation," *Administrative Science Quarterly,* Vol. 35, 317-341.

Howell, Jane M., Christine M. Shea, and Christopher A. Higgins (2005), "Champions of Product Innovations: Defining, Developing, and Validating a Measure of Champion Behavior," *Journal of Business Venturing,* Vol. 20, No. 5, 641-661.

Huang, Ming-Hui and Roland T. Rust (2011), "Sustainability and Consumption," *Journal of the Academy of Marketing Science,* Vol. 39, No. 1, 40-54.

Huber, George P. (1991), "Organizational Learning: The Contributing Processes and the Literatures," *Organizational Science*, Vol. 2, No. 1 (February): 88-115.

Huff, Lenard and Lane Kelley (2003), "Levels of Organizational Trust in Individualist Versus Collectivist Societies: A Seven-Nation Study," *Organization Science,* Vol. 14, No. 1 (January-February), 81-90.

Hult, G. Tomas (2011), "Market-Focused Sustainability: Market Orientation Plus!" *Journal of the Academy of Marketing Science,* Vol. 39, No. 1, 1-6.

Hult, G. Tomas M, Robert F. Hurley, and Gary A. Knight (2004), "Innovativeness: Its antecedents and impact on business performance," *Industrial Marketing Management,* Vol. 33, 429-438.

Hult, G. Tomas M., David J. Ketchen Jr., and Ernest L. Nichols (2002), "An Examination of Cultural Competitiveness and Order Fulfillment Cycle Time Within Supply Chains," *Academy of Management Journal*, Vol. 45, No. 3, 577–586.

Hult, G. Tomas M. and David J. Ketchen Jr. (2001), "Does Market Orientation Matter? A Test of the Relationship Between Positional Advantage and Performance," *Strategic Management Journal,* Vol. 22, No. 9, 899-906.

Hunt, Shelby D. (2011), "Sustainable Marketing, Equity, and Economic Growth: A Resource-Advantage, Economic Freedom Approach," *Journal of the Academy of Marketing Science,* Vol. 39, No. 1, 7-20.

Hunt, Shelby D. and Robert M. Morgan (1995), "The Comparative Advantage Theory of Competition," *Journal of Marketing,* Vol. 59 (April), 1-15.

Hurley, Robert F. and Tomas M. Hult (1998), "Innovation, Market Orientation and Firm Learning: An Integration and Empirical Examination," *Journal of Marketing,* Vol. 62 (July): 42-54.

IISD (1995), *GATT, the WTO and Sustainable Development*. International Institute for Sustainable Development: Winnipeg, Canada.

Im, Subin and John P. Workman Jr. (2004), "Market Orientation, Creativity, and New Product Performance in High-Technology Firms," *Journal of Marketing,* Vol. 68 (April), 114-132.

Impact Reporting and Investment Standards (IRIS): http://iris-standards.org/ accessed July 16, 2010.

IUCN, UNEP, WWF (1996) "Caring for the Earth: A Strategy for Sustainable Living," In *Principles of Environmental Conservation and Sustainable Development: Summary and Survey*, Rockefeller SC (ed). Earth Charter Project, Earth Council: San Jose, Costa Rica; pages 129–131.

Jackson, Tim (2009), *Prosperity Without Growth: Economics for a Finite Planet.* London: Earthscan.

Jaworski, Bernard J. and Ajay Kohli (1993), "Market Orientation: Antecedents and Consequences," *Journal of Marketing,* Vol. 52 (July), 53-70.

Jaworski, Bernard J. and Ajay Kohli (1996), "Market Orientation: Review, Refinement, and Roadmap," *Journal of Market Focused Management,*Vol. 1, No. 2, 119-35.

Jelinek, Mariann (1979), *Institutionalizing Innovation: A Study of Organizational Learning Systems.* New York: Praeger.

Johnson, R. L. (2009), "Organizational Motivations for Going Green or Profitability versus Sustainability, *The Business Review*, Vol. 13, No. 1, 22–28.

Jones, Peter, Colin Clarke-Hill and Daphne Comfort (2007), "Marketing and Sustainability," *Marketing Intelligence and Planning,* Vol. 26, No. 2, 123-130.

Jones, Gareth R., and Jennifer M. George (1998), "The experience and evolution of trust: Implications for cooperation and teamwork," *Academy of Management Review,* Vol. 23, No. 3, 531–546.

Kim, Hann Earl and Johannes M. Pennings (2009), "Innovation and Strategic Renewal in Mature Markets: A Study of the Tennis Racket Industry," *Organization Science,* Vol. 20, No. 2, 368-383.

Kirca, Ahmet H., Satish Jayachandran, and William O. Bearden (2005), "Market Orientation: A Meta-Analytic Review and Assessment of Its Antecedents and Impact on Performance," *Journal of Marketing* (April), 24-41.

Kitschelt, Herbert (1991), "Industrial Governance Structures, Innovation Strategies, and the Case of Japan: Sectoral or Cross-National Comparative Analysis? *International Organization,* Vol. 45, 453-493.

Knott, Anne Marie and Hart E. Posen (2009), "Firm R&D Behavior and Evolving Technology in Established Industries," *Organization Science,* Vol. 20, No. 2, 352-367.

Kohli, Ajay and Bernard J. Jaworski (1990), "Market Orientation: The Construct, Research Propositions, and Managerial Implications," *Journal of Marketing,* Vol. 54 (April), 1-18.

Kotler, Philip (1984), *Marketing Management: Analysis, Planning, and Control.* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Kotler, Philip and Alan R. Andreasen (1987), *Strategic Marketing for Nonprofit Organizations,* Englewood Cliffs, NJ: Prentice-Hall, Inc.

Kramer, Roderick M. and Tom R. Tyler. (1996), *Trust in Organizations: Frontiers of Theory and Research*. Sage, Thousand Oaks, CA.

Kumar, N. (1996), "The power of trust in manufacturer-retailer relationships," *Harvard Business Review,* Vol. 74, No. 6 (November–December), 94–106.

Lawson, Robert B. and Curtis L. Ventriss (1992), "Organizational Change: The Role of Organizational Culture and Organizational Learning," *The Psychological Record,* Vol. 42 (Summer), 205-19.

Lee, Deishin and Lionel Bony (2009), "Cradle-to-Cradle Design at Herman Miller: Moving Toward Environmental Sustainability," *Harvard Business School Case 9-607-003.*

Levin, Daniel Z. (2000), "Organizational Learning and the Transfer of Knowledge: An Investigation of Quality Improvement," *Organization Science,* Vol. 11, No. 6, 630-647.

Levitt, Theodore (1962), *Innovation in Marketing: New Perspectives for Profit and Growth.* McGraw-Hill, New York.

Li, Tiger and Roger J. Calantone (1998), "The Impact of Market Knowledge Competence on New Product Advantage: Conceptualization and Empirical Examination," *Journal of Marketing,* Vol. 62 (October), 13-29.

Liao, Jianwen (Jon), Jill R. Liao, and Hao Ma (2009), "Organizational Dynamic Capability and Innovation: An Empirical Examination of Internet Firms," *Journal of Small Business Management,* Vol. 47, No. 3, 263-286.

Lichtenthaler, Ulrich and Holger Ernst (2009), "The Role of Champions in the External Commercialization of Knowledge," *Journal of Product Innovation Management,* Vol. 26, 371-387.

Lubin, David A. and Daniel C. Esty (2010), "The Sustainability Imperative," *Harvard Business Review*, Vol. 88, No. 5, 42-50.

Luo, Xueming and C.B. Bhattacharya (2006), "Corporate Social Responsibility, Customer Satisfaction, and Market Value," *Journal of Marketing,* Vol. 70, No. 4, 1-18.

Maidique, M. and B.J. Zirger (1984), "A Study of Success and Failure in Product Innovation: The Case of the U.S. Electronics Industry," *IEEE Transactions on Engineering Management,* Vol. 31, No. 4, 192-203.

Maignan, Isabelle and O.C. Ferrell (2004), "Corporate Social Responsibility and Marketing: An Integrative Framework," *Journal of the Academy of Marketing Science,* Vol. 31, No. 1, 3-19.

Markham, Stephen K. (1998), "A Longitudinal Examination of How Champions Influence Others to Support Their Projects," *Journal of Product Innovation Management*, Vol. 15, 490-504.

Markham, Stephen K. (2000), "Corporate Championing and Antagonism as Forms of Political Behavior: An R&D Perspective," *Organization Science,* Vol. 11, No. 4, 429-447.

Markham, Stephen K. and Abbie Griffin (1998), "The Breakfast of Champions: Associations Between Champions and Product Development Environments, Practices and Performance," *Journal of Product Innovation Management,* Vol. 15, 436-454.

Mayer, Roger C., James H. Davis, F. David Schoorman (1995), "An Integrative Model of Organizational Trust.," *Academy of Management Review*, Vol. 20, No. 3, 709–734.

McAllister, Daniel J. (1995), "Affect and Cognition-Based Trust as Foundations for Interpersonal Cooperation in Organizations," *Academy of Management Journal,* Vol. 38, No. 1, 24–59.

McKee, D. (1992), "An Organizational Learning Approach to Product Innovation," *Journal of Product Innovation Management,* Vol. 9, No. 3, 232-245.

Menguc, Bulent and Seigyoung Auh (2006), "Creating a Firm-Level Dynamic Capability through Capitalizing on Market Orientation and Innovativeness," *Journal of the Academy of Marketing Science,* Vol. 34, No. 1, 63-73.

Menguc, Bulent and Lucie K. Ozanne (2005), "Challenges of the "Green Imperative": A Natural Resource-Based Approach to the Environmental Orientation-Business Performance Relationship," *Journal of Business Research,* Vol. 58, 430-438.

Miles, Raymond E. Charles C. Snow, Alan D. Meyer, and Henry J. Coleman Jr. (1978), "Organizational Strategy, Structure, and Process," *The Academy of Management Review,* Vol. 3, No. 3, 546-562.

Milne, Markus J. (1996), "On Sustainability, the Environment, and Management Accounting," *Management Accounting Research,* Vol. 7, 135-161.

Moorman, Christine and Anne S. Miner (1997), "The Impact of Organizational Memory on New Product Performance and Creativity," *Journal of Marketing Research,* Vol. XXXIV (February), 91-106.

Nakata, Cheryl, Zhen Zhu, and Maria L. Kraimer (2008), "The Complex Contribution of Information Technology Capability to Business Performance," *Journal of Managerial Issues,* Vol. XX, Number 4, 485-506.

Narver, John C. and Stanley F. Slater (1990), "The Effect of a Market Orientation on Business Profitability," *Journal of Marketing* (October): 20-35.

Nederhof, Anton J. (1985), "Methods of Coping with Social Desirability Bias: A Review" *European Journal of Social Psychology,* Vol. 15, 263-280.

Nelson, Richard R. and Sidney G. Winter (1982), *An Evolutionary Theory of Economic Change.* Cambridge, MA: Harvard University Press.

Nelson, Richard R. (1995), "The Agenda for Growth Theory: A Different Point of View," *IIASA Working Paper.*

Nidumolu, Ram, C.K. Prahalad, and M.R. Rangaswami (2009), "Why Sustainability is Now the Key Driver of Innovation," *Harvard Business Review,* Vol. 87, No. 9, 56-64.

Nunnally, Jum C. (1978), *Psychometric Theory.* Ney York: McGraw Hill.

Opperwal, Harmen, Andrew Alexander, and Pauline Sullivan (2006), "Consumer Perceptions of Corporate Social Responsibility in Town Shopping Centres and Their Influence on Shopping Evaluations," *Journal of Retailing and Consumer Services,* Vol. 13, 261-274.

Ottman, Jacquelyn A., *Green Marketing: Opportunity for Innovation.* NTC/Contemporary Books, Lincolnwood, IL.

Parboteeah, K. Praveen, Helena M. Addae, John B. Cullen (2012), "Propensity to Support Sustainability Initiatives," *Journal of Business Ethics,* Vol. 105, 403-413.

Pearce, David, Anil Markandya, Edward Barbier (1989), *Blueprint for a Green Economy.* Earthscan: London.

Peattie, Ken (1995), *Environmental Marketing Management: Meeting the Green Challenge,* Pitman Publishing, London, UK.

Peloza, John and Lisa Papania (2008), "The Missing Link Between Corporate Social Responsibility and Financial Performance: Stakeholder Salience and Identification," *Corporate Reputation Review,* Vol. 11, No. 2, 169-181.

Peloza, John and Jingzhi Shang (2010), "How Can Corporate Social Responsibility Activities Create Value for Stakeholders? A Systematic Review," *Journal of the Academy of Marketing Science,* forthcoming. Available online August, 2010.

Penrose, Edith (1959), *The Theory of the Growth of the Firm.* London: Basil Blackwell.

Pentland, Brian T. and Martha S. Feldman (2005), "Organizational Routines as a Level of Analysis, *Industrial and Corporate Change,* Vol. 14 (October), 793-815.

Peters, Tom J. and Nancy Austin (1985), *A Passion for Excellence.* Cambridge, MA: Random House, Inc.

Peters, Tom J. and Robert H.Waterman (1982), *In Search of Excellence.* Cambridge, MA: Harper & Row Publishers, Inc..

Pfeffer, Jeffrey (2010), "Building Sustainable Organizations: The Human Factor," *Academy of Management Perspectives,* Vol. 24, No. 1, 34-45.

Pisano, Gary P. (1994), "Knowledge, Integration, and the Locus of Learning: An Empirical Analysis of Process Development," *Strategic Management Journal,* Vol. 15 (Winter), 85-100.

Podsakoff, Philip M., Scott B. Mackenzie, Jeong-Yeon Lee, and Nathan P. Podsakoff (2003), "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies," *Journal of Applied Psychology,* Vol. 88, No. 5, 879-903.

Porter, Michael E. (1990), "The Competitive Advantage of Nations," *Harvard Business Review,* Vol. 68, March-April, 73-93.

Prahalad, C.K. and G. Hamel (1990), "The Core Competence of the Organization," *Harvard Business Review,* Vol. 68, No. 3, 79-91.

Prahalad, C.K. (2005). *The Fortune at the Bottom of the Pyramid: Eradicating Poverty Through Profits*. New Jersey: Wharton School Publishing.

Ringle, C.M., S. Wende, S. Will: SmartPLS 2.0 (M3) Beta, Hamburg 2005, http://www.smartpls.de.

Roy, Robin, David Wield, J.P. Gardiner, and Stephen Potter (1996), *Innovative Product Development,* The Open University, Milton Keynes, UK.

Russo, Michael V. (2003), "The Emergence of Sustainable Industries: Building Natural Capital," *Strategic Management Journal,* Vol. 24, No. 4, 317-331.

Sackmann, Sonja A. (1991), *Cultural Knowledge in Organizations.* Newbary Park, CA: Sage.

Salzmann, O. U. Steger, and A. Ionescu-Somers (2008), "Determinants of Corporate Sustainability Management: An Empirical Contingency Approach," in *Zeitschrift für Betriebswirtschaf,* J. Schwalbach (ed), pages 1-22, Wiesbaden, Germany: Gabler.

Sarkar, MB, Raj Echambadi, S. Tamer Cavusgil, Preet S. Aulakh (2001), "The Influence of Complementarity, Compatibility, and Relationship Capital on Alliance Performance," *Journal of the Academy of Marketing Science,* Vol. 29, No. 4, 358-373.

Schon, Donald (1963), *Displacement of Concepts,* Routledge, London, England, UK.

Schumpeter, Joseph A. (1934), *The Theory of Economic Development.* Cambridge, England: Cambridge University Press.

Schumpeter, Joseph A. (1938), "English Prices and Public Finance, 1660-1822," *The Review of Economics and Statistics,* Vol. 20, 21-37.

Schumpeter, Joseph A. (1942), *Capitalism, Socialism, and Democracy.* New York: Harper.

Senge, Peter (1990), *The Fifth Discipline,* New York: Doubleday.

Senge, Peter (2007), "Waking the Sleeping Giant. Business as an Agent for Consumer Understanding and Responsible Choice," *Journal of Corporate Citizenship,* Vol. 26, 25-27.

Shapiro, Bensen P. (1988), "What the Hell Is 'Market Oriented'?" *Harvard Business Review,* Vol. 66, No. 6, 119-125.

Sheth, Jagdish N., Nirmal K. Sethia, and Shanthi Srinivas (2011), "Mindful Consumption: A Customer-Centric Approach to Sustainability," *Journal of the Academy of Marketing Science,* Vol. 39, No. 1, 21-39.

Shockley-Zalabak, P., K. Ellis, G. Winograd, (2000), "Organizational Trust: What it means, why it matters," *Organizational Development Journal,* Vol. 18, 35–48.

Simon, Herbert A. (1991), "Bounded Rationality and Organizational Learning," *Organization Science,* Vol. 2 (February), 125-34.

Simon, Herbert A. (1969), *Sciences of the Artificial,* Cambridge: MA: M.I.T Press.

Sinkula, James M. (1994), "Market Information Processing and Organizational Learning," *Journal of Marketing,* Vol. 58 (January), 35-45.

Sinkula, James M. (2002), "Market-based success, organizational routines, and unlearning," *Journal of Business and Industrial Marketing,* Vol. 17, No. 4, 253-269.

Sinkula, James M., William Baker, and Thomas Noordewier (1997), "A Framework for Market-Based Organizational Learning: Linking Values, Knowledge and Behavior," *Journal of the Academy of Marketing Science,* Vol. 25, No. 4, 305-319.

Slater, Stanley F. and John C. Narver (1994), "Does Competitive Environment Moderate the Market Orientation-Performance Relationship?," *Journal of Marketing,* Vol. 58, No. 1, 46-55.

Slater, Stanley F. and John C. Narver (1995), "Market Orientation and the Learning Organization," *Journal of Marketing,* Vol. 59, No. 3, 63-74.

Slater, Stanley F. and John C. Narver (1998), "Customer-Led and Market-Oriented: Let's Not Confuse the Two," *Strategic Management Journal,* Vol. 19, No. 10, 1001-1006.

Slater, Stanley F. and John C. Narver (1999), "Market-Oriented is More than Being Customer-Led," *Strategic Management Journal,* 20, No. 12, 1165-1168.

Slater, Stanley F. and John C. Narver (2000), "The positive effect of a market orientation on business profitability: A balanced replication," *Journal of Business Research,* Vol. 48, No. 1, 69-73.

Slotegraaf, Rebecca, Christine Moorman and J. Jeffrey Inman (2003), "The Role of Firm Resources in Returns to Market Deployment," *Journal of Marketing Research,* Vol. XL, 295-309.

Spector, Paul E. (1987), "Method Variance as an Artifact in Self-Reported Affect and Perceptions at Work: Myth or Significant Problem," *Journal of Applied Psychology,* Vol. 72*,* 438–443.

Strong, Carolyn (1997), "The Problems of Translating Fair Trade Principles into Consumer Purchase Behavior," *Marketing Intelligence & Planning*, Vol. 15, No. 1, 32–37.

Szulanski, Gabriel (2000), "Appropriability and the Challenge of Scope: Banc One Routinizes Repication" in *The Nature and Dynamics of Organizational Capabilities* by Giovannie Dosi, Richard R. Nelson and Sidney G. Winter (Eds), Oxford University Press, New York, 69-97.

Teece, David J. (1976), *The Multinational Corporation and the Resource Cost of International Technology Transfer.* Cambridge, MA: Ballinger.

Teece, David J. (1986a), "Transactions Cost Economics and the Multinational Enterprise," *Journal of Economic Behavior and Organization,* Vol. 7, 21-45.

Teece, David J. (1986b), "Profiting form Technological Innovation," *Research Policy,* Vol. 15, No. 6, 285-305.

Teece, David J. (1988), "Technological Change and the Nature of the Firm," in G. Dosi, C. Freeman, R. Nelson, G. Silverberg, and L. Soete (eds.), *Technical Change and Economic Theory.* New York: Pinter Publishers. 256-281.

Teece, David J., Gary Pisano and Amy Shuen (1997), "Dynamic Capabilities and Strategic Management," *Strategic Management Journal,* Vol. 18, No. 7, 509-533.

Tellis, Gerard J., Jaideep C. Prabhu, and Rajesh K. Chandy (2009), "Radical Innovation Across Nations: The Preeminence of Corporate Culture," *Journal of Marketing,* Vol. 73 (January), 3-23.

Thomas, Kenneth W. and Ralph H. Kilmann (1975), "The Social Desirability Variable in Organizational Research," *Academy of Management Journal,* Vol. 18, 741-752.

Thompson, Victor A. (1965), "Bureaucracy and Innovation", *Administrative Science Quarterly,* Vol. 10, No. 1, 1-20.

Tsang, Eric W.K. and Shaker A. Zahra (2008), "Organizational Unlearning," *Human Relations*, Vol. 61, No. 10, 1435-1462.

Tushman, Michael L. and Philip Anderson (2004), *Managing Strategic Innovation and Change: A Collection of Readings.* Oxford University Press, Oxford, UK.

Urbach, Nils and Frederik Ahlemann (2010) "Structural Equation Modeling in Information Systems Research Using Partial Least Squares," *Journal of Information Technology Theory and Application (JITTA)*: Vol. 11, No, 2.

United Kingdom Secretaries of State for the Environment (1994), *Sustainable Development: The UK Strategy*. HMSO: London.

Utterbach, James M. (1971), "The Process of Technological Innovation Within the Firm," *The Academy of Management Journal,* Vol. 14, No. 1, 75-88.

Van de Ven, Andrew H. (1986), "Central Problems in the Management of Innovation," *Management Science,* Vol. 32, No. 5, 590-607.

Verhees, Frans J. H. M., and Matthew T. G. Meulenberg (2004), "Market Orientation, Innovativenss, Product Innovation, and Performance in Small Firms," *Journal of Small Business Management,* Vol. 42, No. 2, 134-154.

Wachernagel, Mathias and William E. Rees (1996), *Our Ecological Footprint. Reducing Human Impact on the Earth*. New Society Publishers, Gabriola Island, BC.

Walsh, James P., and Gerardo Rivera Ungson (1991), "Organizational Memory," *Academy of Management Review,* Vol. 16 (January), 57-91.

Wang, Alex (2006), "Dimensions of Corporate Social Responsibility and Advertising Practice," *Corporate Reputation Review,* Vol. 11, No. 2, 155-168.

WBCSD (2008), *Sustainable Consumption Facts and Trend From a Business Perspective*. Geneva: World Business Council for Sustainable Development.

Webster, Frederick E. (1988), "Rediscovering the Marketing Concept," *Business Horizons,* Vol. 31 (May-June), 29-39.

Weerawardena, Jay (2003), "Exploring the Role of Market Learning Capability in Competitive Strategy," *European Journal of Marketing,* Vol. 37(3/4), 407-429.

Weerawardena, Jay, Aron O'Cass, and Craig Julian (2006), "Does industry matter? Examining the role of industry structure and organizational learning in innovation and brand performance," *Journal of Business Research,* Vol. 59, 37-45.

WEF (2009), *Redesigning Business Value: A Road Map for Sustainable Consumption.* Geneva: World Economic Forum.

Weick, Karl E. (1979), *The Social Psychology of Organizing*. Addison-Wesley: Reading, MA.

Werbach, Adam (2009), *Strategy for Sustainability: A Business Manifesto.* Harvard Business Press: Boston, MA.

Wijnhoven, Fons (2001), "Acquiring Organizational Learning Norms: A Contingency Approach for Understanding Deutero Learning," *Management Learning,* Vol. 32, No. 2, 181-200.

Willard, R. (2008), *Objection-Handling Clinic on Inhibitors the Next Wave* in *Environmental Management: Readings and Cases,* M.V. Russo (Ed), Sage, Los Angeles, 169-190.

Williams, Larry J, Nathan Hartman, and Flavia Cavazotte (2010), "Method Variance and Marker Variables: A Review and Comprehensive CFA Marker Technique," *Organizational Research Methods,* Vol. 13, No. 3, 477-514.

Wood, Donna J. (1991), "Corporate Social Performance Revisited," *Academy of Management Review,* Vol. 16, No. 4, 691-718.

World Commission on Environment and Development (1987). *Our Common Future,* Oxford University Press, Oxford, UK.

Worldwatch Institute (2010), *State of the World: Transforming Cultures, from Consumerism to Sustainability.* W. W. Norton: New York.

Yamagishi, T., K. S. Cook, M. Watabe, (1998), "Uncertainty, Trust and Commitment Formation in the United States and Japan," *American Journal of Sociology,* Vol. 104, No. 1, 164–194.

Yau, Oliver H.M., Raymond P.M. Chow, Leo Y.M. Sin, Alan C.B. Tse, C.L. Luk, Jenny S.Y. Lee (2007), "Developing a Scale for Stakeholder Orientation," *European Journal of Marketing,* Vol. 41, No 11/12.

Zhou, Kevin Zheng, Chi Kin (Bennet) Yim, and David K. Tse (2005), "The Effects of Strategic Orientations on Technology- and Market-Based Breakthrough Innovations," *Journal of Marketing,* Vol. 69 (April), 42-60.

VITA

KELLY L WEIDNER

EDUCATION

2006 – 2012	University of Illinois at Chicago, Chicago, IL Doctor of Philosophy in Business Administration, Marketing Thesis: Sustainable Innovation: Drivers, Conditions, and Impact on Triple Bottom Line Performance
2002 – 2004	DePaul University, Chicago, IL Master of Business Administration, Marketing
1994 – 1999	California State University Chico, Chico, CA Bachelor of Science in Business Administration Major in Strategic Management, Minor in English
1997 – 1998	University of Bradford, Bradford, England, UK Studies in Marketing and Strategic Management Diploma with Distinction in Management Studies

HONORS, AWARDS AND DOCTORAL CONSORTIA

2010	AMA-Sheth Doctoral Consortium Fellow at Texas Christian University
2008	Full Scholarship, PhD Sustainability Academy, University of Western Ontario, London, Ontario, Canada
2007	Kauffman Foundation Scholarship, UIC Research Symposium on Marketing and Entrepreneurship
2006-2007	Marketing Science Institute Research Award, $4,000, for "Contemporary Methodologies and Initiatives in the Study of Subsistence Consumers"

PUBLICATIONS

Kelly Weidner (2011), "3rd Bi-Annual Conference on Subsistence Marketplaces Connects Academics and Practitioners Devoted to the Bottom of the Pyramid," *PDMA Visions Magazine,* forthcoming.

Cheryl Nakata and Kelly Weidner (2011), "Enhancing New Product Adoption at the Base of the Pyramid: A Contextualized Model," *Journal of Product Innovation Management,"*.

Kelly L Weidner, Jose Antonio Rosa and Madhubalan Viswanathan (2010), "Marketing to subsistence consumers: Lessons from practice," *Journal of Business Research,* vol. 63, 559-569.

Kelly L Weidner, Jose Antonio Rosa and Madhubalan Viswanathan (2008), "Marketing to Subsistence Consumers: Contemporary Methodologies and Initiatives" *Marketing Science Institute Online Working Papers Collection*, 08-205.

CONFERENCE PRESENTATIONS

Kelly Weidner and Sharmin Attaran, "The Role of Children in Subsistence Markets: Sustaining culture through participatory research methods," *PhD Sustainability Academy,* September, 2008. The University of Western Ontario; London, Ontario, Canada.

Kelly Weidner, "Marketing to Subsistence Consumers: Contemporary Methodologies and Initiatives," *Subsistence Marketplaces Conference,* June 2008, Chicago, IL.

Sharmin Attaran and Kelly Weidner, "Sustaining Culture Through Participatory Research Methods for Subsistence Marketplaces," *Subsistence Marketplaces Conference*, June 2008, Chicago, IL.

Dawn Schneider and Kelly Weidner, "The Role of New Media in Marketing: A Study of Women Entrepreneurs," *UIC Research Symposium on Marketing and Entrepreneurship*, August 2007, Washington, D.C.

AREAS OF RESEARCH INTEREST

- Marketing strategy
- Innovation and new product development
- Sustainability
- Base of the pyramid and developing markets
- International marketing
- Organizational unlearning and learning

AD HOC REVIEWING

- *Journal of Business Research*, special issue on Subsistence Marketplaces, 2011.
- PhD Sustainability Academy, University of Western Ontario; London, Ontario, Canada, 2010.
- UIC Research Symposium on Marketing and Entrepreneurship, 2007 – 2009

DOCTORAL COURSEWORK

<u>Marketing</u>
Marketing Theory with Joseph Cherian
Marketing Strategy with Jelena Spanjol
Consumer Research with José Rosa
New Product Development with Albert L. Page
Marketing and Entrepreneurship with Gerald E. Hills
Services Marketing with Albert L. Page

Independent Study in International Marketing and Culture with Cheryl C. Nakata

Methods
Data and Interpretation in Educational Research with Everett Smith (Ed Psych)
Essentials of Quantitative Inquiry in Education with Kimberly Lawless (Ed Psych)
Multiple Regression in Education with Rebecca Szalacha (Ed Psych)
Analysis of Variance with Lidia Dobria (Psychology)
Structural Equation Modeling with José Rosa (Marketing)
Biostatistics II with Donald Hedeker (Public Health)

COURSES TAUGHT

Marketing 462: Marketing Research (Undergraduate), University of Illinois at Chicago, Instructor Rating: 4.6/5.0, 4.2/5.0
Marketing 360: Introduction to Marketing (Undergraduate), University of Illinois at Chicago, Instructor Rating: 4.5/5.0

TEACHING INTERESTS

Marketing Research
Measurement and Research Design
Innovation Management, New Product Development
Sustainable Business Practices
International Marketing

PROFESSIONAL EMPLOYMENT

Equity Office Properties Trust
Marketing Manager, 2003 - 2006

Levi Strauss & Co.
Customer Marketing Specialist, National Accounts, 2003

DIRECTV, Inc.
Senior Sales Analyst, 2001 - 2003
Promotions Specialist, 2000 – 2001
Promotions Coordinator, 2000