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Supplier social engagement, reciprocity of social practices and performance in supply chains

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A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy

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SUPPLIER SOCIAL ENGAGEMENT, RECIPROCITY OF SOCIAL PRACTICES AND
PERFORMANCE IN SUPPLY CHAINS

(Thesis format: Monograph)

by

Asad Shafiq

Graduate Program in Business Administration

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

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Abstract

Over the last two decades, social and environmental issues in supply chains have attracted increased scrutiny and debate. Moreover, managers are realizing that irresponsible behavior by their supply chain partners is negatively projected to their firm, with the potential for causing adverse publicity, reputational damage, and costly legal obligations. In my dissertation, I focus on supplier engagement efforts of firms aimed at encouraging suppliers to behave in a socially responsible manner. More formally, the research question addressed in this study is: How can firms engage suppliers operating in emerging economies, to behave in a socially responsible manner?

I propose that supplier engagement is a firm-level capability that reflects an organization's expertise in deploying resources and routines, usually in combination, to achieve desired social performance as an outcome. I argue that supplier engagement stems from stakeholder engagement capability of a firm and consists of four underlying dimensions: cultural astuteness, operational astuteness, communication capability, and social cognizance. I further argue that supplier social engagement (SSE) capability helps create reciprocity of social practices between a firm and that of its suppliers. Furthermore, SSE capability includes the ability to fashion incentive mechanisms that are more likely to ensure positive social performance.

This research followed a two-stage approach. The first stage consisted of semi-structured interviews with industry experts and a systematic review of sustainability reports for a selective sample of firms to develop new measurement scales for the study. Q-sort methodology was employed, augmented by inputs from industry experts, to refine the measurement scales. The

second stage of the study consisted of a large-scale survey to validate the study hypotheses. The sampling frame for the second stage comprised of large U.S. firms operating in the manufacturing sector. The data gathered from the large-scale survey was matched to archival performance measures to add validity to the findings of the dissertation. Archival performance data was extracted using the KLD and COMPUSTAT databases.

Keywords: Stakeholder engagement, supplier engagement, sustainable supply chain operations, buyer-supplier relationships, supplier opportunism

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Chapter 1. Introduction

This chapter begins with an objective statement and related research questions. Next, the term ‘supplier social engagement’ is defined and explained. The discussion further links supplier social engagement (henceforth referred to as SSE) capability to reciprocity of social practices between a firm and its suppliers, followed by a brief discussion on the theoretical and managerial contributions of this dissertation. The chapter concludes by laying out the organization of the dissertation.

1.1 Objectives of the study and research question

On April 24 2013, an eight-storey garment factory, collapsed in Bangladesh, killing 1,127 people and injuring more than 2,500 others, making it one of the deadliest industrial accidents in history (Yarddley & Manik, 2013). A few months earlier, more than a hundred people had died in a deadly fire in another Bangladesh garment factory. These accidents prompted worldwide condemnation of working conditions in Bangladesh, and various activist groups called for global clothing brands, such as Tommy Hilfiger and the Gap, and those sold by Walmart, to take responsibility for the working conditions in Bangladeshi factories that produce their clothes (Neate, 2014).

These events highlight the phenomenon that firms are increasingly held accountable, by various stakeholder groups, for social and ecological shortcomings of their suppliers (Foerstl, Reuter, Hartmann, & Blome, 2010). Hartmann & Moeller (2014) use the term ‘chain liability effect’ to signify the additional pressure on firms to ensure that their supply chain members are running their operations in a sustainable manner. In order to cope with such pressure, many firms resort

to monitoring of their upstream members' operations to ensure compliance to social expectations (Klassen & Vereecke, 2012). Enhanced monitoring was also called for by various stakeholder groups such as the International Labor Organization (ILO) and other NGOs after the Bangladeshi accidents. In response, a safety accord, jointly designed by the ILO and various labor unions, aimed at improving working conditions, and conducting rigorous independent inspections in Bangladeshi factories, was signed by many retailers, such as H&M, Inditex (Zara), Primark, C&A, Tommy Hilfiger, PVH (Calvin Klein), Tesco, Benetton, Marks & Spencer, and Carrefour (Greenhouse, 2013).

However, despite the signing of this accord, there is a growing concern among retailers that apparel suppliers in Bangladesh might setup proxy factories for clearing audits and real production would continue in factories with similar conditions, hidden from the auditors (Bradsher, 2013). These types of concerns over suppliers' reactions to enhanced monitoring are not uncommon, as similar incidents have occurred in the past. Roberts & Engardio (2006) report emergence of a new breed of consultants in China, who assist factories in evading audits. Similarly, Jiang (2008) cites an overseas Levis Strauss & Co. factory as stamping the time cards with legal amount of hours for their employees a week before they even began working. This was done to fulfill the demand from the parent firm of adhering to allowable working hours for factory workers.

It is evident from the examples mentioned above that enforcement through auditing seems to have limited success as suppliers can evade audits (Jiang, 2008). It is also becoming increasingly difficult for firms operating in developed countries to rely on their supplier's claims of compliance to agreed social conduct. In light of such supplier experiences, firms are not sure whether to broaden the scope of monitoring efforts using third-party audits or to resort to other

mechanisms for compliance. Some studies suggest a mix of monitoring and independent third-party audits as a possible solution to this problem (Klassen & Vereecke, 2012), while others have recommended supplier development efforts to mitigate their irresponsible social behavior (Lu, Lee, & Cheng, 2012).

In this study, the focus is on investigating organizational determinants of supplier engagement in relation to socially responsible practices. In the last few years, there has been increased pressure on firms to engage with stakeholder groups relevant to them (International Finance Corporation, 2007). However, almost unanimously, all studies discussing stakeholder engagement focus on stakeholder groups external to the organization. Moreover, the intent behind stakeholder engagement seems to be building credibility around firms' efforts to become socially and ecologically responsible organizations. This holistic approach of stakeholder engagement fails to capture specifics of supplier engagement. The main objective of this study is to explore ways through which a firm can improve its suppliers' socially responsible behavior and supplier engagement is proposed as a possible mechanism for this purpose. Engaging suppliers to influence their social behavior has rarely been discussed in the operations management literature. More formally, the research question addressed in this dissertation is: *How can firms engage suppliers operating in emerging economies, to behave in a socially responsible manner?*

I envision this research question to be addressed in a series of inter-connected studies. The first study, which is this dissertation, aims at exploring development of organizational-level capabilities to influence supplier's social behavior. Future studies will explore the response of suppliers to engagement efforts and their perspective on socially responsible practices. The role of the behavioral dimension of the buyer-supplier relationships in developing an understanding of supplier engagement will also be explored in future studies.

1.2 Definitions of the terms

Before defining the main concepts of the study, it is important to mention that the focus of this study is only on the social side of sustainable operations. Given the breadth of sustainability related challenges facing organizations, it was impractical for the purposes of a single research project to incorporate every dimension of sustainability, and it was, therefore, necessary to limit my scope. There have been calls from operations management scholars to conduct more research on the social side of sustainability (e.g. Klassen & Vereecke, 2012; Linton, Klassen, & Jayaraman, 2007; Sodhi & Tang, 2012) and this dissertation is an attempt towards that direction.

The focus in this research project is on various organizational determinants of engaging with suppliers. I propose that such social engagement can result in improved social performance of firms. Specifically, I propose that social engagement of suppliers is a firm-level capability that reflects an organization's expertise in deploying resources and routines, usually in combination, to achieve desired social performance as an outcome. I operationalize this capability as a multidimensional construct reflected by four complementary dimensions: cultural astuteness, bi-directional communication, operations astuteness, and social cognizance.

SSE capability is conceptualized and operationalized using stakeholder engagement literature and the resource based view. In the literature, *stakeholder engagement* is defined as the process by which an organization involves people and / or groups who may be affected by the decisions of the organization or can influence the implementation of an organization's decisions (AccountAbility, 2011). Based on theoretical arguments drawn from literature on stakeholder engagement and buyer-supplier relationships, I posit that the SSE capability contains a mix of relational and transactional mechanisms (details are provided in Chapter 2). I further argue that firms need to encourage their suppliers to behave in a socially responsible manner but the

encouragement should be supplemented by transactional mechanisms. More formally, SSE is defined in this dissertation as *a firm-level capability that enables an organization to encourage its suppliers to behave in a socially responsible manner through simultaneous deployment of relational mechanisms such as cultural astuteness and bi-directional communication, and transactional mechanisms such as operations astuteness and social cognizance.*

The operational definitions of the four dimensions of SSE capability are provided below:

1. ***Cultural astuteness***: The ability of a firm to recognize the cultural differences between itself and that of its suppliers and plan for social engagement accordingly
2. ***Bi-directional communication***: The ability of a firm to effectively communicate its social objectives to its suppliers
3. ***Operations astuteness***: The ability of a firm to recognize the operational constraints of its suppliers and plan for social engagement accordingly
4. ***Social cognizance***: A firm's knowledge or recognition of social issues throughout its supply chain

SSE capability, as conceptualized in this study, comprises of a mix of relational and transactional mechanisms and prior literature postulates that relational capabilities help create reciprocity of practices of a firm and those of its suppliers. The development of relational capabilities require firms to adopt a collaborative managerial mindset for building a strategic advantage (Paulraj, Lado, & Chen, 2008). Relational capabilities, by definition, influence the ability to align incentives and generate common goals between a firm and other entities (Kale & Singh, 2007). Since the main goal of social engagement of suppliers is to ensure socially responsible supply chain operations, I argue that SSE capability creates reciprocity of social practices between a firms and its suppliers. In this study, reciprocity refers to responding to a positive action with

another positive action (Gouldner, 1960). SSE capability could also be thought of as an antecedent to creating social reciprocity between a firm and its suppliers.

Drawing a link between relational capabilities and performance, Parmigiani et al. (2011) argues that strong relational capabilities include the ability to fashion incentive mechanisms that are more likely to ensure positive upstream social and environmental performance. Therefore, I posit that SSE capability results in improved firm social performance.

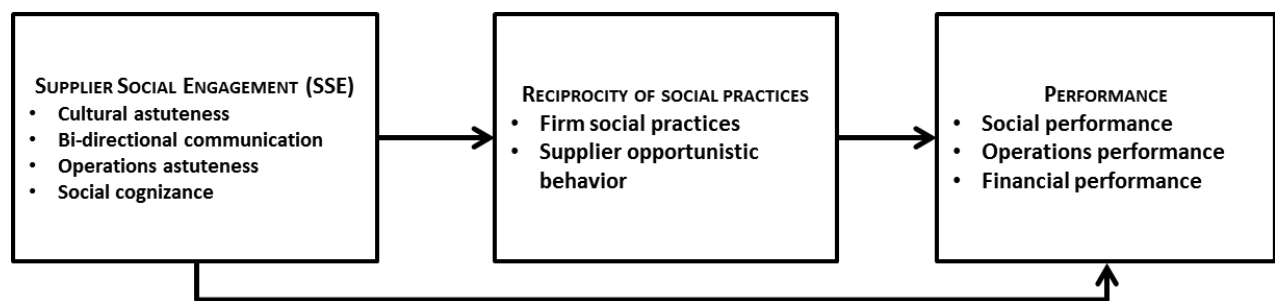


Figure 1-1: Theoretical model

Figure 1-1 outlines the theoretical model for this study. This dissertation followed a two-stage approach where the first stage consisted of semi-structured interviews with industry experts, and a systematic review of corporate sustainability reports for a selective sample of firms known for their corporate social responsibility efforts, to develop an initial pool of items for the newly proposed constructs in the study. Q-sort methodology was rigorously followed, augmented by inputs from industry experts, to finalize the items from the initial pool. The second stage of the study consisted of a large-scale survey to validate and confirm the proposed scales. The data obtained from conducting the large-scale survey was also used to test the structural model derived from the theoretical model.

1.3 Theoretical contribution

This study offers several theoretical contributions. First, the concept of supplier engagement to develop a socially responsible supply chain has not been addressed in the operations management literature. Supplier social engagement, as conceptualized here, is not the same as supplier development nor corporate social responsibility, as the concept explores the cultural and operational astuteness needed to address both firm and supplier shortcomings. While strategy literature has discussed stakeholder engagement, the focus of such studies has been to develop a holistic approach to engage stakeholders external to an organization. As such, this study focuses on a specific stakeholder group i.e. suppliers and discuss ways for firms to encourage its suppliers to be socially responsible. The second contribution is the conceptualization of SSE as a higher-order capability. Such a conceptualization is consistent with the operations strategy literature where a firm's capabilities include the portfolio of skills and resources it possesses to produce outcomes (Peng, Schroeder, & Shah, 2008). Moreover, the role of capabilities in improving performance is also strengthened by hypothesizing a positive association of SSE capability and social and operations performance.

Third, I argue that complementarity exists among the four underlying dimensions of cultural astuteness, bi-directional communication, operations astuteness, and social cognizance. Each individual dimension of SSE capability represents a unique resource and it is the complementarity among the four dimensions of SSE capability that results in social engagement of suppliers. To put it differently, it is the bundling of four underlying dimensions of SSE capability that, when put together, help engage suppliers to behave in a socially responsible manner. The concept of complementarity of a set of resources / routines to help improve social performance of supply chains has not been addressed in the operations management literature.

Fourth, the concept of reciprocity of social practices is a contribution to the sustainable operations literature. Reciprocity is not a new concept for operations management researchers and the concept has been employed in earlier studies to discuss sourcing arrangements (Narasimhan, Nair, Griffith, Arlbjørn, & Bendoly, 2009), trust in buyer-supplier relationships (Ireland & Webb, 2007) and development of social capital (Carey, Lawson, & Krause, 2011). However, reciprocity has been rarely used in studies focused on sustainable operations. Lastly, the simultaneous use of survey and archival performance measures adds validity to the findings of the study and also serves as theoretical contribution to the field of operations management.

1.4 Managerial contribution

In the beginning of this chapter, a few examples, from recent history, were cited where suppliers operating in emerging markets of the world either decided to completely ignore the instructions from buyer firms on acceptable social conduct or tried to hide the fact that irresponsible social practices were being carried out in their facilities. In this study, the focus is on exploring ways for buying firms to engage suppliers that operate in emerging economies, to improve their social conduct. This topic has managerial relevance considering enhanced pressure on firms, from various stakeholder groups, to ensure a socially and ecologically sound supply chain. At a broader level, this study offers operations and supply chain managers a framework to assess their firms' engagement efforts and how such engagement is influencing their relationship with suppliers. Such an assessment might facilitate the targeted adoption of particular socially responsible practices both from the buyer and the suppliers' end.

In addition, the SSE capability construct, as conceptualized in this study, consists of four underlying dimensions. Each dimension is conceptualized as contributing to the social engagement of suppliers and, while some can argue that not all dimensions are equally important

to every organization, overall the four dimensions combined, provide managers a template to help evaluate their organization's existing set of skills and capabilities.

At a deeper level, managerial efforts to perform on each of the four dimensions requires development of systems and processes that should bring about supplementary benefits, in addition to supplier engagement, to the buying firm. For example, in this dissertation, cultural astuteness reflects the ability of a firm to understand the culture prevalent at its suppliers' premises. Culture is an important determinant of the conduct of a firm, and a thorough understanding of suppliers' cultural paradigms can help buying firms understand the rationale underlying supplier actions and behaviors. Developing such an understanding should result in enhanced trust and strong buyer-supplier ties. On similar lines, acquiring in-depth knowledge of supplier operations is recommended and operations astuteness is the term used in this study to signify a firm's efforts in acquiring knowledge about its supplier's operations. Again such information gathering should result in a firm's confidence in its supplier ability to deliver on its commitments resulting in improved buyer-supplier relationship.

Moreover, I also posit that social engagement of suppliers will result in creating reciprocity of social practices between firms and its suppliers. By arguing for a positive association between SSE capability and reciprocity of social practices, this study provides supply chain managers a motivation to first assess and later on develop capabilities to engage their suppliers.

1.5 Organization of the dissertation

The remaining dissertation is organized as follows: Chapter 2 presents previous interdisciplinary research related to social practices and builds the conceptual foundation for SSE capability and its four underlying dimensions. The discussion draws upon two theoretical perspectives -

resource-based-view (RBV) and stakeholder theory - to build the theoretical framework. Chapter 3 presents the conceptual model linking SSE capability to reciprocity of social practices and its impact on social and operations performance. Chapter 4 outlines the methodology followed in this study and Chapter 5 has the main results of the study. Chapter 6 has an in-depth discussion of the results of the study along with some post-hoc models. Chapter 7 is the concluding chapter discussing the contributions and limitation of the study. The final chapter also outlines opportunities for future research.

Chapter 2. Conceptualization of SSE capability

The focus of this chapter is on conceptualization of ‘supplier social engagement (SSE)’ capability as a multidimensional construct consisting of four underlying dimensions. SSE is defined as a firm-level capability that enables an organization to encourage its suppliers to behave in a socially responsible manner through simultaneous deployment of relational mechanisms such as bi-directional communication and cultural astuteness, and transactional mechanisms such as operations astuteness and social cognizance. While each dimension of SSE could be thought of as a standalone resource, it is the complementarity of these four dimensions that boosts engagement efforts and results in improved social performance. The examination of the complementarity of these resources – parsimoniously represented by the SSE capability construct – is required to improve our understanding and theory on the relevant antecedents of reciprocity of social practices and performance. Complementarity exists among two practices when adding an activity while another activity is already being performed has a higher incremental effect on performance (Cassiman & Veugelers, 2006).

The two theoretical frameworks that aid in conceptualizing SSE capability are the stakeholder theory (Freeman, 1984) and the resource based view (Barney, 1991). Therefore, this chapter begins by introducing stakeholder theory, and drawing from strategic management and operations management literature, an overview of the relevant stakeholder groups to a firm and the demands such groups lay upon firms are briefly discussed. Next, I focus on explaining stakeholder engagement as outlined in recent research literature. I also discuss how firms are pursuing stakeholder engagement by presenting findings of a review of sustainability reports for a selective sample of firms. Taking a lead from stakeholder theory and from literature on stakeholder engagement, I discuss the role of suppliers as a stakeholder group and how firms can

approach supplier engagement. Next, the resource-based view is introduced that provides the theoretical underpinning of SSE capability as an organizational capability. Towards the end of the chapter, I provide operational definitions of each dimension of SSE capability and review the relevant scholarly literature for each dimension.

2.1 Stakeholder theory

Stakeholder theory (Freeman, 1984) has been widely employed in studies involving both business and society. In addition, the stakeholder model is used as a central paradigm in strategic management literature discussing corporate social responsibility. Freeman (1984) defines stakeholders as individuals or groups who could influence or be influenced by the activities of the firm while Donaldson and Preston (1995) define stakeholders as “persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity”. In the strategic management literature, many studies (e.g. Clarkson, 1995; Jones, 1995; Carroll & Buchholtz, 2008) divide stakeholders into four main groups namely: internal stakeholders, customers, suppliers and the community in which the firm operates.

Jones (1995) identifies two important roles performed by stakeholders, which help shape the social behavior of an organization. First, stakeholders serve as a source of expectations about what constitutes desirable and undesirable firm performance. Second, stakeholders evaluate how well firms have met expectations and/or how firms' behaviors have affected the groups and organizations in their environment. The evaluation role of stakeholders is important in assessing social performance of firms as stakeholders make judgments about their experiences, the experiences of other stakeholders, and the degree to which expectations have been met by a firm's social performance.

The focus of this dissertation is on social engagement of suppliers through deployment of various organizational-level skills and resources. This makes stakeholder theory relevant, as firms need to know ‘who’ are the relevant stakeholders; ‘what’ are their concerns; and ‘how’ their concerns can be addressed (Klassen & Vereecke, 2012). While all three questions need to be tackled, prior strategic management literature stresses the need to first identify the most influential and relevant stakeholders to a firm (Mitchell, Agle, & Wood, 1997). Similarly, literature on stakeholder engagement has also stressed the need to initiate the engagement process by first identifying the relevant stakeholders to a firm (Smith, Ansett, & Erez, 2011). Parmigiani, Klassen, & Russo (2011) add that identifying relevant stakeholder groups is not a straightforward task; however it is ostensible that firms should not weigh all stakeholder groups equally.

From an operations and supply chain management perspective, Parmigiani, Klassen, & Russo (2011) discuss the role of *stakeholder exposure* in determining the relevance of a specific stakeholder group to a firm. The study introduces ‘control’ and ‘accountability’ as determinants of *stakeholder exposure* and presents a 2×2 matrix where the interaction of control and accountability results in four different stakeholder exposure categories for a firm. For supply chains, ‘control’ stems from the direct or implied influence that a firm has regarding particular issues, business decisions, or outcomes while ‘accountability’ captures the extent to which firms are required or expected to justify their decisions and actions for product design, sourcing, production or distribution to stakeholders. The varying effects of control and accountability on *stakeholder exposure* are summarized in Figure 2-1. For example, in case of a specific social issue where a firm that has low control, but the accountability that is attributed from stakeholders is high, would be an example of a *demanding* stakeholder exposure category. Similarly, *foundational* stakeholder exposure relates to having high firm control and high accountability

attribution from stakeholders for the issue. Figure 2-1 provides an operational template for firms to weigh the demands from various stakeholder groups. The 2×2 matrix of stakeholder exposure got empirical validity when in a recent study Hartmann & Moeller (2014), demonstrated that stakeholder groups attribute higher accountability to prominent firms within a supply chain for any undesirable social and / or environmental incident in their supply chains. In summary, firms need to make sure they are connecting to the relevant stakeholder groups and research based on stakeholder theory presents several frameworks for firms to create that distinction. Moreover, firms need to take into account the demands of relevant stakeholders, as it helps them build a positive corporate image and improve their social and environmental performance (Laan, Ees, & Witteloostuijn, 2007).

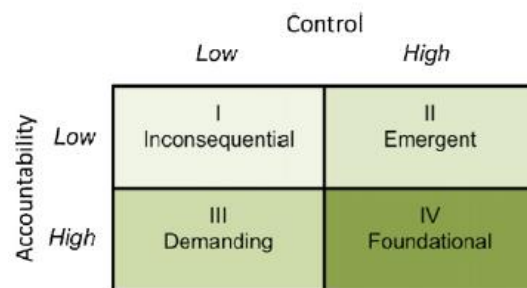


Figure 2-1: Stakeholder exposure: control and accountability for social issues in the supply chain (adapted from Parmigiani et al. 2011)

The stakeholder exposure matrix introduced in Figure 2-1 also helps understand the demands of relevant stakeholders (i.e. the ‘what’ question). Firms need to first concentrate on social issues for which their accountability is high. The results of the study by Hartmann & Moeller (2014) also suggested that prominent firms within a supply chain are held accountable for social and / or ecological shortcomings regardless of the level of control these firms have on preventing the catastrophe. Therefore, from the perspective of this dissertation, firms need to make sure that

their suppliers operate in a socially responsible manner. There are both financial and reputational benefits for firms if they can ensure that their suppliers conduct themselves in a socially responsible manner (Foerstl et al., 2010). The results of Trudel & Cotte (2009) demonstrate that consumers are willing to pay substantially more for ethically produced goods than for unethically produced goods, suggesting that there is a financial reward for socially responsible behavior. The negative consequences of irresponsible social behavior should also be taken into account. The results of Trudel & Cotte (2009) further indicate that consumers will punish the producer of unethically produced goods to a greater extent than they will reward a company that offers ethically produced goods. Hartmann & Moeller (2014) further add that the chain liability effect also creates strong risks for the focal firm (i.e. higher responsibility attributions increase consumers' anger and propensity to boycott). A final piece to complete the 'What' puzzle is to clarify the definition of what constitutes socially responsible practices from an operations management perspective. Klassen & Vereecke (2012) present a detailed discussion on first defining social issues within an operations and supply chain context and then using that definition to link social issues with risk and capabilities. Social issues in a supply chain context are defined as: *a set of activities related to product or process aspects that affect human safety and welfare, community development, and protection from harm that are either influenced by or implemented by the supply chain and/or operations function* (Klassen & Vereecke, 2012).

The last question of 'how' to respond to stakeholder demands is the main focus of this dissertation. While earlier studies have suggested enhanced monitoring (Klassen & Vachon, 2003), third party social auditing (Awaysheh & Klassen, 2010) and collaboration as possible mechanisms to mitigate social issues from supply chains, this dissertation is suggesting supplier engagement as a viable alternative.

2.2 Stakeholder engagement

Stakeholder engagement is defined as the process by which an organization involves people and / or groups who may be affected by the decisions of the organization or can influence the implementation of an organization's decisions (AccountAbility, 2011). This definition has been adopted by 'AA 1000 - Stakeholder Engagement Standard'; a standard developed by *AccountAbility*¹ to help organizations devise and implement their stakeholder engagement strategy. A more comprehensive definition of 'stakeholder engagement' is provided by International Finance Corporation (2007) that describes stakeholder engagement as *a more inclusive, and continuous process between a company and those potentially impacted that encompasses a range of activities and approaches*. The handbook of 'Stakeholder Engagement (International Finance Corporation, 2007)' and the 'AA1000 – Stakeholder engagement' standard (AccountAbility, 2011), both use Freeman (1984) definition of stakeholders *comprising of individuals or groups that could influence or be influenced by the activities of the firm that are generally categorized in four main groups namely: internal stakeholders, customers, suppliers and the local community*.

2.2.1 Supplier engagement

Research studies that followed Freeman's (1984) work on stakeholder management (e.g. Clarkson, 1995; Jones, 1995; Carroll & Buchholtz, 2008) describe suppliers as an important stakeholder group, whose demands should be taken into consideration by firms. However, most stakeholder engagement literature including the IFC handbook (International Finance Corporation, 2007) and the stakeholder engagement standard (AccountAbility, 2011) focuses

¹ *AccountAbility* is a global organization providing solutions to corporate responsibility challenges and sustainable development and the most recent version of the standard was published in 2011.

primarily on stakeholder groups “external” to the core operation of a business, such as affected communities, local government authorities, non-governmental and other civil society organizations, local institutions and other interested or affected parties.

Moreover, the IFC handbook (International Finance Corporation, 2007) explicitly mentions that it has not addressed engagement with suppliers, contractors or distributors, because interaction with these parties is a core business function for most companies and subject to national regulations and/or established corporate policies and procedures. Similarly, the AA1000 standard (AccountAbility, 2011) mentions that it is applicable to all types and levels of stakeholder engagement, but the word ‘supplier’ is not mentioned a single time in the entire standard.

In a recent study, Smith, Ansett, & Erez (2011) outlined the process followed by GAP to engage various stakeholder groups. GAP’s efforts to engage with stakeholders could be considered a success, as for eight year in a row, it has been recognized as one of the world’s most ethical companies (Ethisphere Institute, 2014). From being considered a below-average performer in terms of sustainable operations in 1992, GAP has successfully transformed its image and since 2004, it has maintained its reputation as one of the world’s most ethical companies (Smith et al., 2011). However, the GAP engagement process as described by Smith et al. (2011) also focuses on only engaging with external stakeholders. Although the process followed by GAP has resulted in improved social and ecological performance of its suppliers, the improvements are largely independent of engagement efforts with external stakeholders. In other words, there is minimal evidence in the study that GAP tried to proactively engage suppliers to encourage them to improve their social and ecological performance. On the contrary, the policy adopted by GAP towards its suppliers was to inform them about GAP’s expectations. It seems that an inherent

assumption from GAP was that once a supplier code of conduct has been agreed upon, adherence from suppliers will follow with occasional non-compliance.

Stakeholder theory recognizes suppliers as an important stakeholder group who can play a pivotal role in the social performance of firms (Clarkson, 1995). However, stakeholder engagement literature indicates that firms seem to have cast out suppliers as a stakeholder group. Rather than focusing on engaging suppliers, suppliers only seem to be a recipient of instructions from buyer firms on how to be a socially responsible supplier. In order to further understand this inconsistency between theory and practice, a review of sustainability reports for a sample of firms was carried out, a brief account of which is provided next.

2.2.2 Stakeholder engagement in practice

In order to understand how firms are trying to engage stakeholders in general and their suppliers in specific, I conducted a rudimentary content analysis from the sustainability reports of the top ranked firms on the Corporate Responsibility magazine's list of 100 best corporate citizens (CR Magazine, 2014). Content analysis has been defined as a systematic, replicable technique for compressing many words of text into fewer content categories based on explicit rules of coding (Krippendorff, 1980; Weber, 1990). Holsti (1969) offers a broad definition of content analysis as, "any technique for making inferences by objectively and systematically identifying specified characteristics of messages". Content analysis also allows inferences to be made which can then be corroborated using other methods of data collection (Stemler, 2001).

According to Krippendorff (1980), six questions must be addressed in every content analysis:

1. Which data are analyzed?
2. How are they defined?

3. What is the population from which they are drawn?
4. What is the context relative to which the data are analyzed?
5. What are the boundaries of the analysis?
6. What is the target of the inferences?

The main objective of conducting the content analysis was to understand how firms are trying to engage suppliers and whether there are any major differences in the way firms approach stakeholder engagement and supplier engagement. For this purpose, the top ten corporate citizens from the list of Corporate Responsibility magazine's list of 100 best corporate citizens, for the year 2014, were chosen for the analysis. The firms who were ranked amongst the top ten corporate citizens included Bristol-Myers Squibb Co., Johnson & Johnson, Gap, Inc., Microsoft Corporation, Mattel, Inc., Weyerhaeuser Co., Ecolab, Inc., Intel Corp., Coca-Cola Co and Walt Disney Co. I systematically read through the corporate social responsibility (CSR) reports for the above-mentioned firms. Appendix A provides an overview of the results for the sample of firms.

Some common themes related to stakeholder engagement and managing supply chains that emerged from the review of the CSR reports are listed below:

1. Whenever the term 'stakeholder engagement' was mentioned, it mostly referred to stakeholders external to an organization that did not include suppliers.
2. Bi-directional communication was mentioned repeatedly as a success factor in stakeholder engagement. However, in case of suppliers, most communication was mentioned in the form of passing instructions from the buying firm onto the suppliers. A unidirectional communication might work where there is a common understanding of social issues between a buying firm and its suppliers (i.e. local suppliers or suppliers

operating from developed countries). However, where such a common understanding is lacking, bi-directional communication is needed.

3. Supplier monitoring and auditing was repeatedly mentioned as a necessity to ensure socially responsible supply chain operations.
4. Most corporate reports suggested that firms should develop a comprehensive understanding of social issues of material value within their supply chains. In other words, the need for a deeper understanding of social issues that could exist in a firm's supply chain was stressed to cope with any future contingencies.

In order to further elaborate on the four common themes that emerged from the review of the CSR reports, I have provided some notable excerpts from these reports in the next section. These excerpts reinforce the view that firms that are regarded as good corporate citizens are actively pursuing stakeholder engagement. However, the review also points out that the scope of such stakeholder engagement is very broad with little emphasis on engaging specific stakeholder groups, such as the suppliers of a firm. The excerpts below also indicate that whenever suppliers are discussed in relation to socially responsible supply chains, the focus is on monitoring / auditing, unidirectional communication and supplier code of conduct compliance.

These common themes led me to conclude that the conceptualization of supplier engagement capability should at a minimum include bi-directional communication as opposed to unidirectional communication, an understanding of supplier operational constraints (termed as operations astuteness) and a deeper understanding of potential social issues in a supply chain (termed as social cognizance). I also added cultural astuteness as a dimension and the rationale of its inclusion is provided later in the chapter.

2.2.2.1 Mattel Inc.

Mattel Inc. explicitly mentions engagement with suppliers but the focus remains on communication and monitoring.

“Over the past several years, Mattel has taken steps to increase our engagement with the companies that provide us materials or services. Our efforts have been focused on communicating our corporate responsibility values and raising awareness during the contracting process. Our standard bid package includes questions about corporate responsibility initiatives, such as the supplier’s commitment to diversity, health and safety, as well as sustainability initiatives..... We monitor our supply chain through site visits and the incorporation of sustainable sourcing terms in our contracts and purchasing documentation. We are developing an information management process to track the origin and certification of packaging materials, as well as improve supplier communication. This includes oversight of outliers in emerging and small local markets and training of our buyers.”

2.2.2.2 GAP Inc.

GAP’s most recent ‘Environment and Social Responsibility’ report (GAP Inc., 2013; pp 11), while discussing stakeholder engagement, states: *“We are involved in many forms of engagement and partnership. Through formal memberships in multi-stakeholder initiatives such as Ceres, the Ethical Trading Initiative and others, we are able to address systemic social and environmental issues that require a broad set of actors from many sectors. On a less formal basis, we partner with key labor rights organizations or environmental groups to address singular issues that require remediation. The nature of our engagement depends on the demands of a given issue.”*

However, on the issue of supplier engagement, monitoring seems to be the dominant strategy for GAP (GAP Inc., 2013; pp 37): *“Monitoring continues to play a key role in our strategy for*

working with factories. While we recognize that monitoring alone is not sufficient to reach all of our goals, it remains foundational to respecting human rights and improving working conditions in our supply chain, and is a key tool that helps us assess human rights risks through country, vendor, issue prevalence, and geographical lenses.”

While discussing supplier code of conduct, the report mentions (GAP Inc., 2013; pp 14):

“Enforcing our Code of Vendor Conduct (COVC) is one of the most powerful ways for us to bring our Human Rights Policy to life. Our COVC seeks to safeguard workers’ rights in the factories where Gap Inc. products are made, and approximately two-thirds of our Social and Environmental Responsibility department are responsible for its enforcement.”

2.2.2.3 Bristol-Myers Squibb Co.

Bristol-Myers Squibb Co. is placed at the top of 100 best corporate citizens and its view of stakeholder engagement is similarly focused on external entities while supplier engagement is reduced to industry-wide improvement initiatives and auditing.

Examples of stakeholders with whom we have engaged include patients, health care providers, employees, communities where we operate, insurers, governments, investors (including socially-responsible investors), sustainability organizations and academic institutions..... Our firm supported industry supply chain initiatives to develop supplier sustainability expectations, helped pilot programs with suppliers, and rolled out environment, health & safety expectations for key suppliers in conjunction with an audit program.

2.2.2.4 Walt Disney Co.

The corporate responsibility magazine places Walt Disney as one of top 10 corporate citizens (CR Magazine, 2014). Disney, while discussing manufacturing operations in China, places

emphasis on visibility of supplier operations so that its social performance can be monitored and improved.

Our stakeholders not only include investors, NGOs, local communities, and advocacy groups but also children, parents, and Disney fans, among others. By engaging with stakeholders of all types and interests, we gain a better understanding of how their needs interact with the needs of our business and society. We actively listen to, and learn from stakeholders, and provide them with information to better understand our actions and intentions....For our licensing business, where Disney branded products are manufactured and sold by independent entities under intellectual property licenses from us, we communicate our expectations and requirements for responsible sourcing and production and actively monitor performance against these expectations and requirements. We remain committed to meeting these challenges through ongoing assessment of the causes of any noncompliance, continuous review and improvement of our operations, and constructive engagement with key stakeholders. We use the term “visibility” to refer to our knowledge of working conditions at each facility within the extended supply chain for Disney-branded products. “Visibility” is a measure of the number of unique facilities for which we have qualified audits or assessments compared with our total authorized facility base.

In summary, these excerpts reinforce the view that most firms are not actively pursuing supplier engagement and while there are indications of shift towards a more relational approach, the dominant supplier management strategy seems to be monitoring.

2.3 Conceptualizing supplier social engagement using RBV

After having defined stakeholder engagement as a process of involving people and / or groups that could influence or be influenced by a firm’s actions (International Finance Corporation,

2007), I envisage supplier engagement as a process geared towards encouraging suppliers to be more sustainable. As explained in Chapter 1, the scope of this study is limited to social side of sustainability, therefore I narrow supplier engagement to social aspects and practices of suppliers. Prior literature on socially responsible supply chains indicates that suppliers play a very important role in identifying and rectifying social issues that exist in a supply chain (Lu et al., 2012). Therefore, in order to minimize negative social issues that might exist in a firm's supply chain, it is as important to engage suppliers, as it is to engage external stakeholder groups.

However, a conceivable tension exists when considering suppliers as stakeholders. This tension arises due to the potential conflicting social and financial goals of suppliers in a buyer-supplier relationship. In order to cope with this conflicting goal problem, previous research on maintaining socially and ecologically responsible supply chains have advocated a mix of monitoring and collaboration (e.g. Awaysheh & Klassen, 2010; Reuter, Foerstl, Hartmann, & Blome, 2010; Vachon & Klassen, 2006). This dissertation similarly advocates that supplier engagement should not only be consisting of relational mechanisms (such as bi-directional communication and cultural astuteness); rather relational mechanisms should be augmented by the use of transactional mechanisms (such as operations astuteness and social cognizance). It is further suggested that it is not the use of individual standalone resources that results in supplier engagement, rather it is the bundling of the set of resources that results in a unique and inimitable capability, named SSE capability in this dissertation.

The discussion on development of firm-specific capabilities as a source of competitive advantage has been outlined through the use of resource-based view (RBV) (Barney, 1991). RBV suggests that firms' resources drive value creation via the development of competitive advantage (Sirmon, Hitt, Ireland, & Gilbert, 2010). However, merely possessing such resources does not guarantee

the development of competitive advantages or the creation of value (Barney, 2001). To realize value creation, firms must accumulate, combine, and exploit resources (Sirmon, Hitt, & Ireland, 2007).

RBV also provides a unique means of analyzing the supply chain to examine the activities along the supply chain individually and collectively (Hitt, Xu, & Carnes, 2016). Each activity along the supply chain requires particular resources and capabilities to accomplish the task and contribute to a competitive advantage. However, it is important, and more challenging, to integrate the existing capabilities (bundled resources) across the supply chain, and leverage them effectively, in order to create a competitive advantage. In so doing, firms can realize greater cost reductions or profit improvements with the help of their supply chain partners (Hitt et al., 2016). Resource-based theorists view the firm and its supply chain as a unique bundle of resources that, if employed in distinctive ways, can create competitive advantage (Barney, 2012). RBV has also been employed in sustainability research and as per RBV, a firm having a legitimate interest in its sustainability program and who has consistently demonstrated superior sustainability performance in the past is expected to have developed organizational routines and capabilities to handle a large array of sustainability issues.

My conceptualization of SSE as a capability is consistent with the operations strategy literature where a firm's capabilities include the portfolio of skills and resources it possesses along with the way those skills and resources are bundled to produce outcomes (Peng et al., 2008). A capability from an operations management perspective is defined as 'the strength or proficiency of a bundle of interrelated routines and resources for performing specific tasks' (Peng et al., 2008). It is further elaborated that capabilities do not reside in individual routines or resources, but emerge from the synergistic interplay among multiple interrelated set of resources, routines.

This implies that capabilities are built through consistent managerial choices in identifying, developing and integrating resources and routines (Coates & McDermott, 2002). Furthermore, firms that combine resources in a unique way may achieve an advantage over competing firms who are unable to do so (Dyer & Singh, 1998).

The strategy literature uses the term bundling to denote the process by which capabilities are formed. Resources within the firm's resource portfolio are integrated (i.e., bundled) to create capabilities, with each capability being a unique combination of resources allowing the firm to take specific actions (e.g., marketing, R&D, etc.) (Sirmon et al., 2007). Conceptually, capabilities, or resource bundles, range from small combinations of resources that are designed to perform less complex tasks to the higher-order concept of "patching" or integrating "chunks" of businesses (Sirmon et al., 2007).

In this study, I am arguing that each individual dimension of SSE capability represents a unique set of resources and routines and it is the bundling of the four dimensions that result in higher relational assets. I also suggest that the causal ambiguity of the bundling of four underlying dimensions makes it difficult for the competitors to imitate SSE capability of a firm. To put it differently, it is the complementarity of the four underlying dimensions of SSE capability that makes it a unique and inimitable capability.

The use of both relational and transactional mechanism to conceptualize a multidimensional higher-order capability is not new to the field of operations management research. For example, Cao & Zhang (2011) conceptualized the multidimensional *supply chain collaboration* capability using a mix of relational and transactional elements. Similarly, Zacharia, Nix, & Lusch (2011) advocated that the use of such capabilities result in both operational and relational performance

improvements. Taking a lead from stakeholder engagement literature, recommendations of RBV and from the review of the sustainability reports, I conjecture that supplier social engagement is a multidimensional higher-order capability that at a minimum should include bi-directional communication, an appreciation of existing and potential social issues within a supply chain, information gathering and investment in monitoring mechanisms. In summary, I conceptualize SSE as a firm-level capability that enables an organization to encourage its suppliers to behave in a socially responsible manner through simultaneous deployment of relational mechanisms such as bi-directional communication and cultural astuteness, and transactional mechanisms such as operations astuteness and social cognizance.

2.4 Supplier development and supplier social engagement

The buyer-supplier relationship literature has traditionally used the term ‘supplier development’ to denote efforts from a buyer firm to improve the operations performance of its suppliers. The term ‘supplier development’ was first used by Leenders (1966) to describe efforts by manufacturers to increase the number of viable suppliers and improve suppliers’ performance. Since then operations management research has advanced the concept of supplier development to include operational knowledge transfer activities, such as shared vision, direct involvement, and supplier assessment (Krause, Scannell, & Calantone, 2000)

Formally, supplier development has been defined as *any effort by a buying firm to improve the performance or capabilities of its suppliers* (Krause, Handfield, & Scannell, 1998). A number of studies have offered empirical evidence that supplier development is effective in solving the buyer’s productivity and quality problems (Krause et al., 1998), and improving its operational performance (Krause, Pagell, & Curkovic, 2001; McHugh, Humphreys, & McIvor, 2003). Modi & Mabert (2007) add that supplier development can facilitate the flow of tacit manufacturing and

operations knowledge across organizational boundaries through diverse communication activities and resource allocation. Krause et al. (2007) advanced the concept of supplier development, using social capital theory, to better understand the value created by buyer firms by committing to long-term relationships and developing social capital with key suppliers through supplier development. A central proposition of Krause et al. (2007) was that when organizations invest in relation-specific assets, engage in knowledge exchange, and combine resources through governance mechanisms, a supernormal profit can be derived on the part of both exchange parties and value is created for buyer firms.

The purpose of this section is to clarify the distinction between *supplier development* and *supplier engagement*. As explained earlier, *supplier development* is defined as efforts by a buying firm to improve the performance or capabilities of its suppliers whereas *supplier engagement* is defined in this thesis as a firm-level capability that enables an organization to encourage its suppliers to behave in a socially responsible manner. Although, the two definitions indicate some overlap, the conceptualization and operationalization of supplier engagement is different from supplier development. The first difference is the nature of relationship between a buyer and a supplier firm in a buyer-supplier dyad. Supplier development is generally advocated for strategic suppliers i.e. suppliers that are important either because of the nature of the product and / or service provided, or because of the dynamics of the supply market. This makes the success of the buyer-supplier relationship critical to the smooth operation of the buyer firm. In such a scenario, a long-term approach to developing a buyer-supplier relationship is advocated with an emphasis on investment in creating mutual resources and / or capabilities. This is one of the reasons for Krause et al. (2007) to suggest the development of relational, structural and cognitive capitals between a buyer firm and its suppliers of strategic nature. In such strategic

relationships, the buying firm may arguably be prepared to help the supplier through information sharing, technical assistance, training, and direct investment in supplier operations, in return for the benefits of improved performance and joint value creation. In return, the supplier firm may be expected to share information, dedicate human resources to the improvement effort, and invest in specific equipment.

However, social issues within a supply chain are not pertinent to only strategic suppliers. Rather, I would argue that the probability of occurrence of social incidents from non-strategic suppliers may be higher as compared to the strategic suppliers just because of the nature of involvement. Therefore, there is a need to develop a capability that enables an organization to effectively and efficiently gather information about its supply base (i.e. transactional norms) and at the same time, provides means to a buyer firm to understand the various constraints at its suppliers' end (i.e. relational norms). In this study, supplier engagement is conceptualized as a capability that provides firms with the necessary skillset to encourage its suppliers to operate in a socially responsible manner. As such, the supplier engagement capability consists of both relational and transactional norms for suppliers' compliance.

The concept of bundling of resources to create capabilities, as explained in the previous section, is also helpful in understanding the difference between the two concepts. As outlined in the previous section, a capability is a unique combination of resources allowing firms to take specific actions. Bundling of resources indicates that different resources could be integrated to create different bundles representing different capabilities and though there might be an overlap in terms of some underlying resources, the resources that are different provide uniqueness to the bundle. For example, the supplier development capability as conceptualized Krause et al. (2000) has bi-directional communication, shared vision, direct involvement, and supplier assessment as

bundled resources. Similarly, the supply chain collaboration capability as conceptualized by Cao & Zhang (2011) is a bundled set of seven underlying resources / skills: information sharing, goal congruence, decision synchronization, incentive alignment, resources sharing, collaborative communication, and joint knowledge creation. The overlap between *supplier development* and *supply chain collaboration* is evident as some resources / skills are common in both. However, the unique resources in each bundle combined with common resources create a new capability.

In this thesis, supplier engagement is conceptualized as a similar bundle that has bi-directional communication and operations astuteness as two resources that are similar to resources within the *supplier development* capability. The uniqueness of *supplier engagement* capability is the bundling of cultural astuteness and social cognizance with bi-directional communication and operations astuteness. As explained in the next section, cultural astuteness is needed to understand suppliers' paradigms in terms of social compliance while social cognizance provides a firm the necessary skillset to identify social issues within its supply chain.

Another difference between *supplier development* and *supplier engagement* is the emphasis on operational improvements versus social responsibility. Although not explicitly mentioned in the literature but operational gains have been a major drive behind supplier development efforts. On the other hand, supplier engagement has socially responsible supplier operations as the main objective. In summary, supplier development and supplier engagement are two distinct concepts in the literature and basis of their difference lies in their objectives.

2.5 Conceptual development of SSE capability dimensions

This section provides a review of the relevant scholarly literature and the operational definitions of each dimension of SSE capability.

2.5.1 Cultural astuteness

The marriage metaphor has often been used to make contributions to the understanding of buyer-supplier relationships (Celuch, Bantham, & Kasouf, 2006). Just as a married couple needs to understand the personalities and cultural paradigms of each other to make the marriage successful, especially if the marriage is cross-cultural; similarly, firms involved in a buyer-supplier relationship need to understand the similarities and differences that exist between the two firms. Organizational culture is often termed as the personality of an organization (Cartwright & Cooper, 1993). Therefore, culture is as fundamental to an organization as personality is to an individual. In a buyer-supplier relationship, developing a thorough understanding of the similarities and differences among the cultures of both firms becomes important to the success of the relationship.

As supply chains become more global, firms need to familiarize themselves with cultures of other supply chain members. Understanding culture becomes even more critical when firms in a buyer-supplier relationship have different national cultures. Weber, Shenkar, & Raveh (1996) highlight the importance of achieving cultural fit, both at the national and corporate level, in successful merger and acquisitions (henceforth referred to as M&As). From an operations management perspective, firms are increasingly relying on their suppliers to provide strategic support and there is an increased need to develop a better understanding of the different cultural paradigms existing within a supply chain.

In this study, I argue that understanding the supplier's organizational culture is a critical part of supplier engagement and I use the term 'cultural astuteness' to signify the expertise of a firm to understand the organizational culture that exists at its suppliers end. More formally, cultural

astuteness is defined as ‘*the ability of a firm to recognize the cultural differences between its own and that of its supplier’s organizational culture and to plan for social engagement accordingly*’.

Cultural astuteness, as defined here, requires a detailed explanation. First, it is important to note that merely *recognizing* that cultural differences exist is not sufficient to enact social engagement of suppliers. It is the *recognition* that cultural differences have an impact on supplier’s perception of certain demands from buyer firms, related to social performance that is important. To put it differently, many firms might realize that most of their suppliers do not have the same organizational culture as theirs, but this *recognition* will only be valuable if cultural differences are taken into account during supply strategy formulation and decision making, especially when targeting adoption of socially responsible practices.

The second aspect of cultural astuteness that warrants further explanation is the focus on recognizing the differences among cultures at an *organizational* level. Culture could be defined either at a national or an organizational level and previous research has pointed out that organizational cultures, although influenced by the national cultures, could be independent of national cultures (i.e. organizational cultures are not a subset of national culture). A critical factor determining an organizational culture is how deeply and strongly the core values and beliefs of an organization are embedded within the daily lives of organizational members (Hofstede, Neuijen, Ohayv, & Sanders, 1990).

The third point to note is that ‘*cultural astuteness*’ is conceptualized differently from ‘*cultural fit*’. Previous research discussing culture in M&As studies has demonstrated that cultural fit results in better post-merger performance. For example, Weber et al. (1996) assessed the relative role of national and corporate cultural fit in predicting effective integration between merger

partners. Their findings suggested that national culture differentials better predict stress, negative attitudes towards the merger, and actual cooperation, than corporate culture differentials do.

Similarly, Weber & Camerer (2003) suggested that culture incongruence between two integrating firms involved in an M&A results in lower productivity, lower financial performance outcomes, lower relationship satisfaction, and higher levels of conflict. While several other studies have shown that cultural fit matters, most of such research has been carried out in M&As settings. Research on cultural fit in operations and supply chain settings has mostly been theoretical and a handful of empirical studies on cultural fit have been inconclusive in their findings (Cadden, Marshall, & Cao, 2013).

This study takes the view that cultural fit, although beneficial, is not a necessary condition for improved buyer-supplier relationships. Therefore, a firm need not search for suppliers whose culture matches to that of its own culture. If cultural fit is easy to achieve, it has its benefits but lack of it should not preclude firms from engaging with its suppliers. However, it is important for a firm to assess the cultural differences between itself and its suppliers and devise engagement strategies accordingly.

‘Culture’ itself is an anthropological concept and an attempt to conceptualize and operationalize cultural astuteness without reviewing the literature on development of organizational culture will be a futile exercise. The next section provides a brief overview of the literature on organizational culture followed by an overview of cultural studies in operations management research.

2.5.1.1 Organizational culture and its historical development

Understanding organizational culture and how it affects functioning of organizations has been a topic of great interest to organizational theory scholars. Hofstede et al. (1990) pointed out that organizational culture is a construct having the following characteristics: it is (1) holistic, (2)

historically determined, (3) related to anthropological concepts, (4) socially constructed, (5) soft, and (6) difficult to change. Previous research has examined these characteristics both in isolation and in aggregate at the construct level.

Schein (1992) offers a formal definition of culture as: *“a pattern of basic assumptions: invented, discovered, or developed by a given group as it learns to cope with its problems of external adaptation and internal integration-that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.”* Organizational culture, which is a subset of culture, is defined as *“the pattern of shared values and beliefs that help individuals understand organizational functioning and thus provide them norms for behavior in the organization”* (Deshpande & Webster, 1989).

Culture is important because shared values and beliefs generate norms for behavior within an organization; actions of employees are in part governed by these norms and it is therefore expected that there are similarities in behaviors throughout an organization.

Research on organizational culture dates back to 1972 when Harrison (1972) stressed the need to understand organizational culture and its impact on organizational effectiveness. However, the term ‘organizational culture’ was first used by Pettigrew (1979) in a longitudinal study to describe some of the concepts and processes associated with the creation of organizational cultures. Since then, a relatively large volume of research has been carried out to understand the development of organizational culture and its effect on running an organization’s affairs.

Denison (1996) cautions that researchers of organizational cultures should acknowledge the existence of "levels of culture" and the limitations of comparative research to truly understand deeper levels of culture such as assumptions and beliefs. If a study intends to compare cultures

across organizations, then an "intermediate" level of culture, such as values, practices and cultural traits, about which to generalize should be selected.

What is important to note here is that 'cultural astuteness' is defined and conceptualized in this study as a comparative construct. Cultural astuteness portrays the ability of a firm to assess and compare the difference in organizational culture of its supplier from that of its own. Therefore, in this study, the purpose is not to understand the 'evolution process' of culture in organizations but to understand what is the existing culture in an organization and how does that culture affect other factors like social engagement etc.

Perhaps, one of the most detailed quantitative studies involving organizational and national culture is the House, Hanges, Javidan, Dorfman, & Gupta (2004) study, commonly referred to as the GLOBE study. The GLOBE study findings include results from 62 societies and survey of over 17,000 middle managers in three industries: banking, food processing, and telecommunications, as well as archival measures of country economic prosperity and the physical and psychological well-being of the cultures studied. The findings of the GLOBE study are important for developing the cultural astuteness construct for the following reasons:

1. In terms of the linkage between societal and organizational culture, the study findings indicate that organizational cultures are influenced by societal cultures but are not a mere reflection of societal culture.
2. The study findings also indicate that society and industry interacts to effect organizational culture. However, organizational cultures seem to be more of a reflection of their societal context rather than their industry context.
3. The findings also indicated that culture is easier to change at the organizational level than at the societal level.

4. From an operationalization perspective, the study demonstrates that it is appropriate to use the survey data for measuring cultural-level practices.

2.5.1.2 Operations Management Research involving culture:

Research incorporating national and organizational cultures is limited in the operations management literature, but recently the topic has seen a renewed interest. A strong indicator of this trend is the 2010 special issue of 'Journal of Operations Management' titled 'Cultural impacts on Operations Management in Asia'. The special issue was dedicated to research related to the effects of culture on operations management. A brief overview of some of the OM studies on buyer-supplier relationships involving culture is provided below:

Cannon, Doney, Mullen, & Petersen (2010) studied the effect of individualism / collectivism dimension of national culture on buyer-supplier relationships. The study focused on a single dimension of culture and the results demonstrated that in collectivistic cultures, buyer firm's long-term orientation is more dependent on their perception of supplier trustworthiness than supplier's actual performance. On the other hand, it was observed that buyer firms from individualistic cultures placed significantly more emphasis on supplier performance than their trustworthiness. The authors further suggested the need to integrate theories of culture into buyer-supplier relationship theories.

Pagell, Katz, & Sheu (2005) explored the validity of national culture as an explanatory construct for international operations management decision-making and the findings emphasized more detailed studies of cultural dimensions to be carried out to verify their impact on operations and supply chain management. Braunscheidel & Suresh (2009) used two cultural antecedents of market and learning orientation to study their impact on organizational practices of internal integration, external integration with key suppliers and customers and external flexibility. Market

orientation was found to be positively associated with both internal and external integration and external flexibility but learning orientation was only positively related to internal integration.

The study is unique in the sense that it incorporates two organizational cultural dimensions that have been rarely used in previous OM studies.

A more recent multilevel study by Naor, Linderman, & Schroeder (2010) assessed the impact of eight national and organizational cultural dimensions on manufacturing performance. The eight cultural dimensions were borrowed from the GLOBE study (House et al., 2004) and differences on the scores of eight dimensions across eastern and western cultures were discussed. The study is perhaps the only study in the operations management literature that not only incorporates several cultural dimensions but also evaluates both national and organizational cultures together using scales developed by GLOBE study.

To summarize, the review of the seminal research studies involving culture helped me conceptualize the cultural astuteness construct. The findings of Hofstede studies suggest that for comparative studies, quantitative methods can be employed to study culture. The GLOBE study, which has its roots in the Hofstede research, provided an alternate secondary source of data in form of country-level scores of the nine cultural dimensions. These data can be employed in future empirical analysis from the survey data gathered for this study. The review of the operations management studies employing culture indicate that understanding cultural differences in a buyer-supplier relationship is important. Firms that invest resources in understanding the organizational culture of their suppliers benefit in terms of streamlined communication and enhanced trust (Cannon et al., 2010).

2.5.2 Bi-directional communication

Management is a communication-intensive activity, and in the modern corporation, success in management directly depends on the ability of managers to effectively communicate (Phillips & Brown, 1993). The importance of communication in maintaining healthy buyer-supplier relationships has also been emphasized in the operations management literature (Paulraj et al., 2008). For a firm dealing with a supplier in an emerging market, the significance of communication cannot be underestimated; more so in the context of conformance to social expectations. Cultural and contextual differences between a firm and that of its suppliers can result in multiple interpretations of expectations regarding socially responsible behaviors. Sometimes, issues as obvious as child labor can become argumentative; in some cultures, the definition of what constitutes a child and what is the minimum age at which a person can start working are very different from how such issues are addressed under North American laws. Therefore, for matters concerning social expectations and behaviors, it is important to resolve ambiguities through open and effective communication.

Early research has emphasized the importance of communication within an organization. Porterfield (1976) reviewed several books on organizational communication and concluded that a linkage exists between the climate of an organization and the communication that transpires within it. In addition, communication was associated with motivation among the employees. Similarly, Poole (1978) found that organizational communication is an exceedingly complex phenomenon and for a complete explanation of organizational communication structures, variables such as organizational size, level of professionalization in units, and level of differentiation within the organization, which interact with the informational variables, must be included.

In the context of buyer-supplier relationships, Mohr & Nevin's (1990) study is probably the first to offer a theoretical framework for inter-organizational communication within supply chains.

Although the term used by Mohr & Nevin (1990) is marketing channels, operations management scholars have applied the framework to study the effects of various forms of communication in buyer-supplier and supply chain settings (e.g. Prahinski & Benton, 2004). The framework proposed by Mohr & Nevin (1990) uses the mechanistic perspective of communication theory in which communication is viewed as a transmission process.

Mohr & Nevin (1990) further describe two dominant communication strategies that could be used under different channel conditions. These two strategies are called 'collaborative communication strategy' and 'autonomous communication strategy'. *Autonomous communication* includes lower frequency of contact and more unidirectional communication, formal modes, and direct content. This combination is likely to appear with channel conditions of market structures, unsupportive climates, or asymmetrical power. In contrast, and as the name indicates, *collaborative communication* signifies a more frequent communication (high frequency); bi-directional flow of information as against a unidirectional flow from a firm to its suppliers; emphasis on greater use of informal communication and use of indirect communication designed to change beliefs and attitudes. Applying the 'collaborative communication strategy' framework in buyer-supplier relationships, Prahinski & Benton (2004) demonstrated that bi-directional communication positively influences supplier's commitment to the relationship, which indirectly impacts buyer firm's commitment and cooperation. Cao & Zhang (2011), in a recent study added communication as an important dimension of supply chain collaboration.

Bi-directional communication is also thought of as a relational competency (Paulraj et al., 2008) that fosters inter-organizational learning (Powell, Koput, & Smith-Doerr, 1996); results in a reduction of product and performance-related errors (Chen & Paulraj, 2004) and improved buyer and supplier performance. Paulraj et al. (2008) further added that as a relational competency, bi-directional communication takes on the quality of a *quasi-public good* in that it tends to increase in value when used and shared and, thus, fosters *positive-sum* benefits for the supply chain partners.

In summary, bi-directional communication is an important determinant of effective buyer-supplier relationships. In this study, I argue that communication related to social issues is as important as discussing operational issues and I consider bi-directional communication as a key component of SSE capability. Previous operations management studies on social issues within supply chains have rarely addressed the impact of communication on social issues and feedback.

2.5.3 Operations astuteness

The accidents at garment factories in Bangladesh, outlined in the beginning of this dissertation, have reinvigorated the discussion on accountability of international buyers. One of the reasons cited for the fire accident was that the shift was manned beyond its maximum capacity in order to fulfil a large garment order. In order to meet the fast approaching deadline, more labor was added to shifts without considering the potential hazards. The result, as we all know, was disastrous as more than a hundred lives were lost. Similar conditions were present in the Rana Plaza accident where more than a thousand people lost their lives when a factory building collapsed while work was at full swing to match increased demand. These incidents beg several questions related to the ordering and delivery process, some of which include:

- At the time of order placement, did the buyer firm take into consideration the existing production capacity and the supporting infrastructure at the supplier premises to support the supplier's claim that deadlines will be met?
- Were the delivery deadlines, agreed between the buyer firm and the supplier, reasonable considering the existing infrastructure of the supplier at that time?
- Assuming that such precautionary measures were exercised by the buyer firm and the supplier was lagging behind on its schedule because of other operational challenges, why did the supplier not notify the buyer firm on time? What sort of penalties existed in the buying contact / purchase order (PO) for late delivery?
- Were there any mechanisms in place to update the buyer firm on the inventory levels of finished goods? Did the buyer firm ever request such information?

There are several ways to analyze the abovementioned questions. A plausible explanation to some of the issues mentioned above is that the buyer firm was never legitimately interested in engaging suppliers to act in a socially responsible manner. However, recent literature suggests that firms are increasingly being pushed by the public, regulators, and their customers to ensure that their suppliers behave in a socially and ecologically sound manner (Reuter et al., 2010). It is becoming increasingly difficult for firms to turn a blind eye to the potential social and ecological hazards at their supplier premises, as the backlash in case of an accident results in both financial and long-term reputational losses.

An alternate explanation could be that the firms sourcing from the suppliers involved in these accidents were unable to account for the operational capabilities of their suppliers. Either the buyer firms had forced deadlines exceeding the capacity of their suppliers or operational glitches

at the suppliers' caused production delays resulting in the rush for missed deadlines. In either case, the buyer firm had inadequate information on the daily operations of their suppliers.

Literature on buyer-supplier relationships and supply chain collaboration emphasizes 'information sharing' (Cao & Zhang, 2011), which commonly refers to the willingness of both parties in a buyer-supplier dyad to make strategic and tactical data available. Such data can include, but is not limited to, inventory levels, forecasts, sales promotions, strategies, and marketing strategies. The definition of information sharing covers both 'tactical' and 'strategic' data sharing and, even at the basic tactical level of information sharing, operational parameters such as capacity, work in progress (WIP) inventory, finished goods inventory is expected to be shared.

One of the prerequisites for information sharing is the presence of relational capital between a firm and its suppliers (Nahapiet & Ghoshal, 1998) and in the absence of relational capital, accurate information sharing seems improbable. In such cases where relational capital between a firm and its suppliers is lacking, firms interested in engaging their suppliers should develop a sense of operational bottlenecks of their suppliers. 'Operations astuteness' is the term that is used in this study to signify a firm's ability to develop accurate estimates about its supplier's operations. Formally, '*operations astuteness*' is defined as the ability of a firm to recognize the operational constraints of its suppliers and plan for social engagement accordingly. An operationally astute firm can gauge the accuracy of information provided by the supplier through various formal and informal means such as site visits, information gathering from other suppliers in the supply network, industry level associations, etc.

Even in the case of a formal information sharing mechanism, the ability of a firm to be operationally astute is desirable. Recent studies in the operations management literature have cautioned firms against the dark side of buyer-supplier relationships (Villena, Revilla, & Choi, 2011) stating that developing too much relational capital might blind buyer firms from supplier opportunistic behavior (Williamson, 1998). While discussing the dark side of relationships, Anderson & Jap (2005) commented that close relationships are not always synonymous with good relationships and trust, social relationships and investments that make a buyer-supplier relationship successful can become the doorway to the dark side.

In a recent dyadic study on buyer-supplier relationships, Liu, Luo, & Liu (2009) suggested that relational mechanisms are important for improved relationship performance but transactional mechanisms, such as detailed contracts and transaction specific investment complement the relational mechanisms in improving relationship performance and reducing opportunism from the dyadic partner. Other studies have also suggested that that contractual complexity and relational governance function as complements in explaining satisfaction with exchange performance (Poppo & Zenger, 2002). Modifying contracts to incorporate precise behavioral boundaries in conjunction with greater level of relational governance is also suggested as a means to curb unwanted supplier behaviors.

In summary, operations astuteness refers to an ability of a firm to recognize operational constraints of its suppliers and firms should use both formal and informal methods to gather such information. These means of information gathering consists of, but is not limited to, site visits of supplier premises, using supplier networks and third parties to gather information on suppliers, reviewing contractual clauses based on supplier feedback and performance etc.

2.5.4 Social cognizance

During the review of the CSR reports for the selected sample of firms, I realized that there was an emphasis from the firms on delineating social issues that could exist within supply chains. Such identification of potential social issues was also mentioned as a means of keeping a firm updated about potential social risks within its supply chain. This indicates that it is important for firms to be aware of social issues that could exist in their supply chains. However, for a firm to develop such awareness, clarity needs to be sought on what are the expectations of various stakeholder groups from the firm and how such groups characterize business practices as socially responsible versus irresponsible. Social practices turn out to be particularly complex because of their dynamic nature. As characterized by Martin (2002) in his explanation of ‘the virtue matrix’, the definition of social practices evolves, and what is considered to be a leading practice today might be relegated to minimally acceptable tomorrow. Moreover, given that social expectations broaden, practices improve, and stakeholders slowly broaden their expectations. Therefore, firms need to keep up with the continuously changing demands of their stakeholders.

In this study, social cognizance is the term that is used to signify a firm’s efforts to keep itself updated regarding emerging social issues and the changing expectations and demands of their stakeholders. Formally, social cognizance is defined as a *firm’s knowledge or recognition of potential social issues throughout their supply chain*. This definition encompasses not only existing issues that may exist in a firm’s supply chain but also potential social issues that may arise in future. For example, a firm may foresee tightening of regulations on working hours in a supplier’s country due to increased mentioning of such issues in local media or as a result of increased pressure from various activist groups. Similarly, a firm may anticipate that some of its suppliers could undertake irresponsible labor practices in times of high demand etc. Such

anticipation can trigger planning for contingencies and safeguarding against potential future breach of social conduct. The ability of a firm to acquire such knowledge is termed social cognizance in this study.

Egels-Zandén (2007) conducted several case studies on compliance of supplier code of conduct by some Chinese toy suppliers, most of whom were manufacturing toys for different Danish multinational firms. Out of the study's several findings, one that is particularly relevant to social cognizance was the compliance ratio of different socially responsible practices by Chinese suppliers. Out of the nine suppliers studied, eight were found to be adhering to the 'child labor' criteria as stipulated in the supplier code of conduct document. While this finding is encouraging, only one of the nine suppliers was found to be complying with the 'health & safety education' criteria and none out of the nine were found to comply with the 'working hours' criterion. The huge variation in adoption of social practices is partly attributed to the emphasis placed by and knowledge of buyer firms in such matters. The authors argue that since buyer firms in the West were heavily scrutinized for child labor and sweatshops, they placed a heavy emphasis on suppliers to comply with these criteria. Other social issues get less attention because the buyer firm is either completely ignorant of their existence or places lesser emphasis on alleviating them. Social issues such as 'health & safety education' and 'pension and accident insurance' are examples of issues that are less emphasized.

After having defined social cognizance, the next logical question to ask is how firms can develop social cognizance. In other words, what does a firm need to do to keep itself informed about the current and potential social issues within its supply chain? Previous research has emphasized: 1) partnering with other industry players and rating agencies such as the KLD and Sustainalytics, and 2) regular updates to the supplier code of conduct document, to first delineate social issues in

the supply chain and then press suppliers to adopt the revised code of conduct on an industry-wide basis (Emmelhainz & Adams, 1999; Jiang, 2008; Brito, Carbone, & Blanquart, 2008).

Social cognizance of a firm is strengthened by partnering with other firms within the same industry, to develop a common understanding of social issues. Brito et al. (2008) cite several examples of industry-level informal partnerships aimed at educating individual firms on social issues and jointly working towards elimination of such issues from their supply chains. In the UK, the British Standards Initiative (BSI) launched a Community of Practice (CoP) service in 2006, to help develop ethical fashion practices. Similarly, in France, some fashion retailers have created a joint organization called 'Initiative Clause Sociale' (ICS), to deal with the social and environmental concerns arising from suppliers. Such partnerships and team efforts are useful to develop a common understanding of social issues within supply chains. A unified supplier code of conduct, developed and maintained at the industry level can also function as a stronger deterrent for suppliers than a supplier code of conduct document designed and enforced at an individual firm level.

Apart from industry partnerships, another way for a firm to develop its social cognizance is to familiarize itself with various social certification standards and the methodology behind social indices such as the KLD (MSCI Sustainability Indices, 2013) and Sustainalytics. A popular social certification standard is SA8000. It is one of the world's first auditable social certification standard for decent workplaces across all industrial sectors. It is based on conventions of the ILO, UN and national law, and spans industry and corporate codes to create a common language to measure social compliance (Social Accountability International, 2008). It is important for firms to be familiar with such social certification standards as organizations responsible for maintaining social indices regularly review their ratings and definitions of social practices. These

ratings also take into account the changing demands of stakeholders and thus provide firms a useful set of guidelines to enhance their knowledge about such issues.

2.6 Summary

This chapter discussed the theoretical paradigms of stakeholder theory and RBV. Using these theoretical lens, the four dimensions of SSE capability were conceptualized. The chapter also presented a brief overview of the relevant literature on each of the four dimensions. The next chapter is related to the hypotheses development for the theoretical model presented in Figure 1-1.

Chapter 3. Hypothesis development

In the previous chapter, stakeholder theory and RBV helped conceptualize SSE as a higher-order capability. This chapter relates to the hypothesis development of the impact of SSE capability on performance. It is also hypothesized that SSE capability acts as an antecedent to the reciprocity of social practices between a buyer and a supplier firm, and that reciprocity also results in improved social and operations performance. The concept of reciprocity is defined and explained in Section 3.3 using social exchange theory (Gouldner, 1960)

3.1 SSE as multidimensional construct

In this study, I conceptualize supplier social engagement (SSE) as a multidimensional construct and it is proposed that social engagement of suppliers is a firm-level capability that reflects an organization's expertise in deploying resources and routines, usually in combination, to achieve desired social performance as an outcome. This capability is operationalized as a multidimensional construct reflected by four complementary dimensions: cultural astuteness, bi-directional communication, operations astuteness, and social cognizance.

3.1.1 Multidimensional constructs

Multidimensional constructs can exist in several forms and it is important to clearly specify the set of relationships among the overall construct and its dimensions (Edwards, 2001). Law, Wong, & Mobley (1998) state that without specifying the relationships between the overall construct and its dimensions, the various dimensions are simply a collection of related variables, and there is no need to label them as components of a multidimensional construct.

A multidimensional construct is different from a unidimensional construct in a way that a unidimensional construct refers to a single theoretical concept, while a multidimensional

construct consists of a number of interrelated dimensions. These dimensions are regarded as distinct but related concepts rather than a single overall concept (Edwards, 2001).

In order to explain the difference among various types of multidimensional constructs, Law et al. (1998) developed a taxonomy consisting of two classification criteria: (1) Relational level and (2) Relational form. This taxonomy of multidimensional constructs is presented in Figure 3-1.

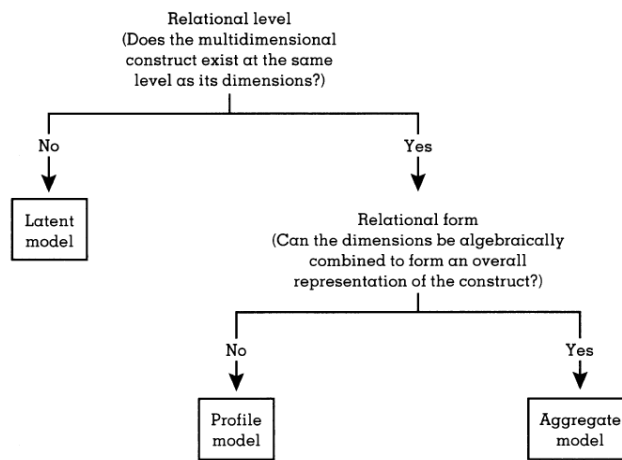


Figure 3-1: Taxonomy of multidimensional constructs
[Adapted from Law et al. (1998)]

‘Relational level’ refers to whether the multidimensional construct exists at a deeper level than its dimensions or whether it exists at the same level, as a combination of its dimensions. If a multidimensional construct could be thought of as a higher-order abstraction underlying its dimensions, then Law et al. (1998) labels this type as ‘latent model’. Another way of conceptualizing a latent model is to think of a latent multidimensional construct as a commonality among its dimensions. For a latent multidimensional construct, its dimensions are simply different forms manifested by the construct and if a latent multidimensional construct

were replaced by a conceptually analogous construct conceived as distinct from its dimensions, then relationships between this construct and the dimensions may be causal (Edwards, 2001).

However, if a multidimensional construct could be thought of as a combination of its underlying dimensions, the construct cannot be called a latent type and the criteria of ‘relational form’ is applied to further classify the construct in various types. ‘Relational form’ indicates whether the multidimensional construct can be formed as an algebraic function of its dimensions. This classification rule applies only if the multidimensional construct does not exist at a deeper conceptual level than its dimensions. In some multidimensional constructs, the dimensions of the construct can be algebraically amalgamated into an overall representation of the construct. Law et al. (1998) labels constructs in this category as aggregate model. In other cases, because of the theoretical nature of the construct, the multidimensional construct is interpreted as various profiles formed by pairing the characteristics of different dimensions. Here, levels of the multidimensional construct are determined by profiling levels of each of the dimensions. Law et al. (1998) labels this as the profile model of multidimensional construct in its proposed taxonomy.

3.1.2 Examples of multidimensional constructs in OM research

Multidimensional constructs are not new to the operations management literature. For example, Peng, Schroeder, & Shah (2008) while studying plant-level capabilities, identified ‘improvement’ and ‘innovation’ as two capabilities and conceptualized these as second-order latent constructs consisting of a set of underlying routines. The authors defined ‘capabilities’ as the strength or proficiency of a bundle of interrelated routines for performing specific tasks (Peng et al., 2008).

Menor & Roth (2007) developed the notion of ‘new service development (NSD) competence’ and defined this competence as reflecting a set of expertise that enables an organization to deploy resources and routines to achieve a desired new service outcome. NSD competence was conceptualized as a second-order latent construct consisting of four underlying dimensions.

Menor, Kristal, & Rosenzweig (2007) introduced a second-order latent construct called ‘operational intellectual capital (OIC)’ consisting of three underlying dimensions of human capital, structural capital and supply chain integration.

More recently, Kristal, Huang, & Roth (2010) developed the notion of ‘ambidextrous supply chain’ and conceptualized it as a second-order construct consisting of supply chain exploitation and exploration as its two dimensions. The authors however, did not explicitly model the higher-order construct as a latent multidimensional construct.

Shafiq, Awaysheh, Klassen, & Johnson (2014) developed four separate higher-order latent constructs. These four second-order latent constructs represented socially responsible practices of business firms aimed at four stakeholder groups: customers, suppliers, employees and local community.

Shah & Ward (2007) argued for the multidimensional nature of ‘Lean’ by deriving a ten factor model. The authors commented that since the 10 factors (i.e. dimensions) derived during empirical analysis are positively and significantly correlated with each other, thereby it provides support to the multidimensional and integrated nature of lean production systems. The authors further commented that it is the complementary and synergistic effects of the 10 distinct but highly inter-related elements that give lean production its unique character and its superior ability to achieve multiple performance goals. While each element by itself is associated with

better performance, firms that are able to implement the complete set achieve distinctive performance outcomes that can result in sustainable competitive advantage (Shah & Ward, 2007).

Based on my conceptualization of SSE capability as explained in Chapter 2 and the taxonomy of Law et al. (1998), it is evident that SSE capability is a higher-order construct of latent type. I categorize SSE as a latent construct because it is a capability consisting of a set of four underlying dimensions. I also posit that the four dimensions underlying SSE capability are complementary. For a latent multidimensional construct, its dimensions are simply different forms manifested by the construct and the relationships between this construct and its dimensions are represented as causal paths (Edwards, 2001). On the basis of the arguments above, I hypothesize:

Hypothesis 1a-1d: SSE capability is multidimensional and is reflected by and positively related to cultural astuteness, operations astuteness, bi-directional communication, and social cognizance.

In the following sections, I argue that SSE capability has an impact on social and operations performance of the buyer firm. I will also argue that SSE capability helps create reciprocity between the social practices of a firm and its suppliers.

3.2 SSE capability and social performance

Operations strategy scholars have long focused on the development of operational capabilities and how such operational capabilities help develop and maintain a sustainable competitive advantage for an organization (Wu, Melnyk, & Flynn, 2010). Operational capabilities are generally defined as learned routines that firms use to convert inputs to outputs, typically

combining both tangible and intangible resources (Winter, 2003). The operations strategy literature draws on a number of intertwined yet distinct elements, including organizational capabilities, practices, and resources (Wu et al., 2010) to understand creation of competitive advantage. Seminal strategic management research (Peteraf, 1993; Barney, 1991) provides a well-developed theoretical framework for understanding how a sustainable competitive advantage arises from the unique and heterogeneous resources of a firm, and operations management researchers have long focused on various operational practices for performance improvement (e.g. Flynn, Sakakibara, & Schroeder, 1995; Ward & Duray, 2000; Shah & Ward, 2003; Kristal, Huang, & Roth, 2010). The resource-based view (RBV) of the firm (Barney, 1991; Peteraf, 1993) provides the foundation for a competitive advantage gained through the use of organizational capabilities. Based on the assumption of heterogeneous resources across firms, the RBV emphasizes the organizational capabilities that underlie a firm's ability to excel in achieving its competitive priorities (Coates & McDermott, 2002).

In terms of sustainability related capabilities, Porter's (1991) "win-win" argument for wider adoption of social and environmental practices was among the first wave of research addressing the link between sustainability practices and financial performance. Since then, operations management scholars have focused on the association among development of environmental capabilities and its impact on environmental and financial performance (e.g. Klassen & Whybark, 1999; Klassen & Vachon, 2003; King & Lenox, 2002; Montabon, Sroufe, & Narasimhan, 2007). Research on social capabilities and performance has also received some attention (Carter, 2000; Klassen & Vereecke, 2012; Roberts, 2003).

In a recent study, Parmigiani, Klassen, & Russo (2011) argued that two types of capabilities are particularly relevant for managing supply chains: technical and relational. Technical capabilities

are defined as the set of organizational routines based on an understanding of the science and technology involved in producing and sourcing goods and services (Teece et al, 1997; Helfat & Raubitschek, 2000). In contrast, relational capabilities include the ability to design contractual and informal mechanisms to align incentives, share information, increase commitment, and generate common goals between the firm and other entities (Holcomb & Hitt, 2007). SSE capability, as conceptualized in the current study consists of a mix of relational and transactional mechanisms that could potentially facilitate coordination, collaboration, knowledge transfer, and adaptation across the supply chain (Dyer & Singh, 1998). Drawing a link between relational capabilities and performance, Parmigiani et al. (2011) argue that relational capabilities include the ability to fashion incentive mechanisms that are more likely to ensure positive upstream social and environmental performance. Heide & Miner (1992) add that since relational capabilities fuel ongoing relationships there is an added incentive for suppliers to perform, resulting in improved supply chain performance.

Since SSE is conceptualized as a firm-level capability, RBV suggests that unique and inimitable capabilities could be a source of competitive advantage resulting in improved performance. SSE as a firm-level capability is particularly desirable in generating positive intermediate outcomes, such as improved supplier social behavior, satisfaction of buyer firm, enhanced trust of buyer firms in their suppliers and improved operations performance. On the basis of these arguments, and drawing parallels from work in the operations strategy literature on impact of operational capabilities on performance, I argue that SSE capability will positively influence social performance of the buyer firm. Thus, I hypothesize:

Hypothesis 2: SSE capability is positively related to social performance of the buyer firm.

3.3 SSE capability and reciprocity of socially responsible practices

In this section, I focus on the theoretical development of Hypothesis 3 and 4. I first start by briefly outlining prior work on reciprocity and then discuss the role of reciprocity of social practices in influencing social performance.

3.3.1 Reciprocity

Reciprocity is a concept that has been thoroughly discussed in literature on buyer-supplier relationships (e.g. Carter, 2000; Cousins, Handfield, Lawson, & Petersen, 2006; Ireland & Webb, 2007; Krause, Handfield, & Tyler, 2007; Malhotra, 2004). The term, originally adopted from the social psychology literature, generally refers to responding to a positive action with another positive action (Gouldner, 1960). According to social exchange theory (Blau, 1960), exchange is based on norms of reciprocity or the belief that a firm acting to benefit a partner organization will be reciprocated favorably for such behavior at a future point in time (Cropanzano & Mitchell, 2005).

As a social construct, reciprocity means that in response to favourable actions, firms are frequently much more cooperative than predicted by the self-interested model of transaction cost economics; conversely, in response to opportunistic behavior from a transacting party, firms are much less supportive of their partner firm's actions (Fehr & Gächter, 2000). In particular to buyer-supplier relationships, Ireland & Webb (2007) argue that developing norms of reciprocity is the best option to diminish concerns about potential opportunistic behavior.

Prior research has also compared reciprocity with negotiated rules and legal contracts (Molm, 2003). The conclusion of such a comparison is that, generally, reciprocity produces better work relationships than contractual agreements and allows entities involved in an exchange

relationship to be more trusting of, and committed to, each other (Molm, Takahashi, & Peterson, 2000). Furthermore, negotiated exchanges incite more unhelpful power use and less equality as compared to reciprocal exchanges (Molm et al., 2000). An additional factor during contract drafting is that firms cannot predict every potential relational risk and drafting clauses in the contract to account for all potential unforeseen developments is impossible (Grover & Malhotra, 2003). Therefore, when an unanticipated contingency surfaces, a firm's reaction likely depends on the magnitude of the contingency and the level of trust existing between partners (Ireland & Webb, 2007). In such situations, social exchange theory predicts that trust between a firm and its supplier plays an integral role (Adler & Kwon, 2002). Partners in a buyer-supplier relationship are more willing to reciprocate in a favorable manner when engaged in a trust-based relationship. However, if any one of the partners expect opportunistic behavior, the odds of reciprocation are relatively less (Ireland & Webb, 2007). In summary, when norms of reciprocity are established, the expectation exists that a favor will be returned, influencing goodwill behavior.

On the issue of reciprocity in buyer-supplier relationships, Malhotra (2004) presents interesting findings. Based on behavioral experiments, the study concludes that buyer firms who are in a position to trust suppliers focus primarily on the risks involved in trusting rather than on how much benefit their trust might provide to the other party. Meanwhile, trusted parties (suppliers in this study) are relatively insensitive to the trustor's (buyer firms in this study) risks and reciprocate more on the basis of the benefits the buyer firm has provided. Thus trustors and trusted parties view the reciprocity interaction from different perspectives, where decisions to trust are more likely when risks are low but reciprocity is more likely when the benefits provided by the buyer firm are high.

In the specific case of socially responsible practices, reciprocity would indicate that a socially responsible firm that has adopted supplier-centric socially responsible practices, would expect its suppliers to reciprocate by acting in a socially responsible manner. In other words, a firm seeking to develop a socially responsible supply chain would want to work with its suppliers to develop supplier-centric social practices, such as developing systems to ensure that its suppliers comply with local / national laws for hiring young workers, implementing systems for timely disbursement of wages at suppliers end or that there is transparency in suppliers' remuneration systems. Based on the notion of reciprocity, once such systems are developed and put in place, the buyer firm would expect the supplier to comply with the requirements.

Reciprocity is a difficult concept to measure and validate empirically. Therefore, I use the approach of evaluating the degree of 'fit' between a firm's supplier-centric social practices and supplier opportunistic behavior to measure reciprocity. This approach of assessing reciprocity between practices has been adopted by strategy literature and a detailed account of it is provided in the next section.

3.3.2 Conceptualizing and operationalizing reciprocity

In this study, reciprocity is measured as the congruence between supplier-centric firm social practices and supplier opportunistic behavior. Therefore, reciprocity would occur when a firm reports lower opportunistic behavior from its suppliers once the firm has invested heavily in developing supplier-centric social practices. Jap & Anderson (2003) defines opportunism as self-interest seeking with guile. The study adds that opportunism involves several elements such as (i) distortion of information, including overt behaviors such as lying, cheating and stealing, as well as more subtle behaviors such as misrepresenting information by not fully disclosing, (ii) renegeing on explicit or implicit commitments such as shirking, or failing to fulfill promises, and

obligations. Details on the specific items for the constructs of ‘supplier opportunistic behavior’ and supplier-centric ‘firm social practices’ are presented in Section 4.3.1. However, it is important to layout the basic details of the constructs in this section to clarify the theoretical model.

The construct of ‘supplier opportunistic behavior’ has been employed in many previous marketing studies on buyer-supplier relationships (e.g Anderson & Jap, 2005; Jap & Anderson, 2003; Jap, Robertson, Rindfleisch, & Hamilton, 2013; Jap, 1999; Seggie, Griffith, & Jap, 2013). These studies confess to the difficulty of measuring selfish motivations and guile directly. The difficulty arises mainly because respondents who report on their own level of self-interest are subject to a social desirability bias. Therefore, in order to avoid this problem, respondents are asked to report on the opportunistic behavior of the other party in the relationship (Jap & Anderson, 2003). In this dissertation, I employ the same technique of capturing supplier opportunistic behavior.

Firm social practices, as conceptualized in this study, are supplier-centric with a focus on maintaining an acceptable level of responsible supplier behavior. Therefore, a high degree of reciprocity would indicate that a firm reports relatively higher adoption of supplier-centric firm social practices and that its suppliers’ opportunistic behavior is reported as low.

The way reciprocity has been conceptualized in this study, it is a natural choice to operationalize it using the concept of ‘fit’. The terms fit, alignment, congruence and consistency have been used interchangeably in the management literature and the concept underlying these terms has served as an important building block for theory construction in several areas of management research, particularly in strategy research (Venkatraman, 1990). One of the first studies that developed a

conceptual framework for assessing 'fit' is Venkatraman (1989), where the author differentiated among different meanings of fit and identified six different perspectives of assessing fit: fit as moderation, fit as mediation, fit as matching, fit as gestalts, fit as profile deviation, and fit as co-variation. Each perspective implies distinct theoretical meaning and requires the use of specific analytical schemes.

In this study, I argue that reciprocity of social practices for firms in a buyer-supplier relationship is necessary for developing and maintaining a socially responsible supply chain. In other words, socially responsible supply chain operations require input from all chain members and unless both the buyer and the supplier firms are willing to reciprocate, it will be difficult to maintain a socially responsible supply chain.

To investigate reciprocity (fit), it is first necessary to identify the type of fit that appropriately explains the relationship of interest. Venkatraman (1989) proposes that six individual types of fit may exist in an organization: covariation, mediation, matching, gestalts, profile deviation, and moderation.

I found that first five methods of fit evaluation discussed by Venkatraman were not appropriate for my analysis. A *fit as co-variation* approach is not appropriate for this study as this approach is based on a prediction of internal consistency between a set of related variables, which is not the case in this study. The *mediation* perspective is not suited to this study, as I do not predict that supplier's practices will intervene with the effect of a firm's socially responsible practices on performance but rather I am examining the fit between the set of practices. The matching approach to evaluating fit implies that two variables of interest are related theoretically without concern for the level of an additional criterion variable. Therefore, assessing fit as matching

would prevent me from analyzing the performance impact of the relationship between buyer's and supplier's practices. To evaluate fit using gestalts, taxonomies of practices are formed by grouping firms into clusters with common attributes and then the fit within each group is tested (Venkatraman, 1989). Evaluating fit using gestalts is also not suited to this study, as I am evaluating the fit between practices at the individual firm level and not at the group level. Assessing fit using profile deviation determines the impact of the distance between an observed set of characteristics with a theoretically defined set of characteristics on a dependent variable. This approach is inappropriate for this investigation since theory does not predict defined profiles that I can compare to the observations. Additionally, profile deviation essentially estimates an approximate "net" effect of overall fit between multiple pairs of variables, but not the specific impact of the congruence/relationship between each pair of variables.

'Fit as moderation' approach implies that the impact of a predictor variable on a dependent variable is influenced by an interaction between the predictor and an additional variable, designated as the moderator—this approach is very commonly applied to test the impact of fit between two variables on an additional variable. Venkatraman (1989) suggested that researchers should invoke this perspective when the underlying theory specifies that the impact of the predictor (e.g. strategy) vary across the different levels of the moderator (e.g. environment). In more general terms, a moderator can be viewed categorically (e.g. types of environment, stages of product life cycle, organizational types) or characteristically (degree of business relatedness, degree of competitive intensity), and it will affect the direction or the strength of the relation between a predictor variable (e.g. strategy) and a dependent variable (e.g. performance).

From a theoretical perspective, *fit as moderation*, measured as the performance impact of the interaction between supplier-centric firm social practices and supplier opportunistic behavior,

best explains the impact of practices on social performance (James & Brett, 1984). Therefore, in this study, I envisage reciprocity as an interaction of supplier-centric firm social practices and supplier opportunistic behavior. Furthermore, I argue that reciprocity of practices (indicated by positive and significant interaction term) will be related to social performance of the buyer firm. To put differently, if reciprocity does not exist, there will be a weaker association between the moderating variable and social performance.

3.3.3 SSE capability as an antecedent to reciprocity of social practices

The development of relational capabilities requires that firms adopt a collaborative managerial mindset for building a strategic advantage (Paulraj et al., 2008). While commenting on the persistent use of relational mechanisms to curb supplier opportunistic behavior, Malhotra, (2004) suggests that that reciprocity is often in the self-interest of trusted parties and is strengthened by the possibility for repeated interaction. Indeed, research on the development of trust suggests that a primary means of building trust and reducing opportunism is through the use of repeated positive interactions over time (Hawkins, Wittmann, & Beyerlein, 2008).

The relational view (Dyer & Singh, 1998), which is an extension of the resource based view, extends the notion of the impact of relational capabilities on reciprocity. The relational view states that as compared to contractual arrangements, relational norms adopted by the buyer firm are particularly effective at aligning supplier incentives and such norms, therefore, promote greater inter-firm communication and cooperation and result in less opportunism. On similar lines, Carter (2000) states that buyer-supplier relationships that are characterized by having a long-term perspective and promoting cooperation, will be more conducive to reciprocity, and such relationships might also be associated with lower levels of unethical behavior. Paulraj, Lado, & Chen (2008) add that interdependent buyer-supplier firms generate greater benefits for

each other by, among other things, facilitating communication, fostering trust and reciprocity, and enhancing overall productivity.

In summary, relational capabilities, by definition, influence the ability to align incentives and generate common goals between the firm and other entities (Kale & Singh, 2007). SSE capability is conceptualized as a mix of relational and transactional capabilities and therefore, it should influence the degree of reciprocity between a firm and its suppliers. Hence, I hypothesize for the interaction effect (i.e. reciprocity) and the two main effects:

Hypothesis 3a: SSE capability is positively related to supplier-centric firm social practices.

Hypothesis 3b: SSE capability is negatively related to supplier opportunistic behavior.

Hypothesis 3c: SSE capability is positively related to reciprocity between practices of buyer and supplier firms.

3.4 Reciprocity of social practices and performance

Prior research on norms of reciprocity in buyer-supplier relationships has concluded that reciprocity strengthens ties and enhances trust among partners, resulting in improved supply chain performance (Carey et al., 2011; Krause et al., 2007). However, there has not been much research on the impact of reciprocity of social practices on performance. Although, while analyzing the impact of corporate social performance of a firm on its financial performance, Jayachandran, Kalaignanam, & Eilert (2013) state that firms seek to maximize their long-term utility through corporate social performance because obligations for future reciprocity from stakeholders are expected to enhance their performance. Therefore, there is some evidence from previous research that reciprocity of social practices could result in improved firm performance.

Reciprocity is operationalized in this study as fit between supplier-centric firm social practices and supplier opportunistic behavior. The concept of fit (congruence, alignment, agreement, match) between the operations strategy and operational activities of a firm has been widely examined in the operations literature since the publication of Skinner's work (Kroes & Ghosh, 2010). The concept has its roots in the work of Wheelwright & Hayes (1985), where it was argued that manufacturing processes should be developed in congruence with the product plans and competitive priorities of a firm. Similarly, Boyer & McDermott (1999) comment that fit of operations strategy with the overall firm's strategy is critical to a firm's overall performance. Similarly, Kroes & Ghosh (2010) evaluated the degree of fit between a firm's outsourcing drivers and its competitive priorities and established that fit results in improved supply chain and business performance.

In this study, I envisage reciprocity of social practices, operationalized as 'fit', to positively influence the social performance of firms. I argue that reciprocity among social practices (indicated by positively significant interaction term) will strengthen the relationship between a firm's supplier-centric social practices and its social performance. On the contrary, if there is no reciprocity i.e. the supplier is behaving opportunistically, the association of social practices and performance will be a weaker one. To put differently, a firm that has developed SSE capability can derive relational rents in form of improved social performance, as suggested by the relational view. In addition, this capability-performance link is strengthened if there is reciprocity of social practices. Therefore, I hypothesize for the interaction effect (i.e. reciprocity) and the two main effects:

Hypothesis 4a: Supplier-centric firm social practices will be positively related to firm social performance.

Hypothesis 4b: Supplier opportunistic behavior will be negatively related to firm social performance.

Hypothesis 4c: Higher level of reciprocity will have a positive impact on social performance of the buyer firm.

3.5 Impact of social performance on operations performance

The concept of triple bottom line (TBL) advocates simultaneous pursuit of financial, environmental and social performance (Elkington, 1998). The TBL framework has gained considerable momentum in the last few years and more and more firms are now focusing on improving their triple bottom line. In line with this thought, firms realize that maintaining an image of a good corporate citizen is not possible without having socially responsible supply chain operations. Social issues are considered an integral part of the broad framework of sustainability (Klassen & Vereecke, 2012) and firms are facing increased pressure from various stakeholder groups to address social issues that exist in their supply chains.

Drawing a link between social performance and financial performance, instrumental stakeholder theory suggests that responsible behavior of a firm can result in improved financial performance (Clarkson, 1995; Mitchell, Agle, & Wood, 1997). Although a relatively large volume of research exists linking corporate social performance (CSP) to corporate financial performance (CFP), the direction of causality between CSP and CFP has been contentious (Crane et al., 2008).

Nonetheless, most studies, including several meta-analyses (e.g. Orlitzky, Schmidt, & Rynes, 2003) have predicted positive influence of corporate social performance on financial performance. In line with research on business strategy, literature on socially responsible operations has also argued for a positive impact of responsible operations on operations

performance (e.g. Cater, 2000a, Carter 2000b, Parmigiani et al. 2011, Klassen & Vereecke, 2012 etc.).

On the basis of previous research, I posit that social performance of a firm will have a positive impact on its financial performance and that there will be a parallel mediation of this relationship by operations performance and sustainability performance:

Hypothesis 5a: Operations performance will mediate the relationship between social performance and financial performance.

Hypothesis 5b: Sustainability performance will mediate the relationship between social performance and financial performance.

The hypothesized structural model is provided in Figure 3-2.

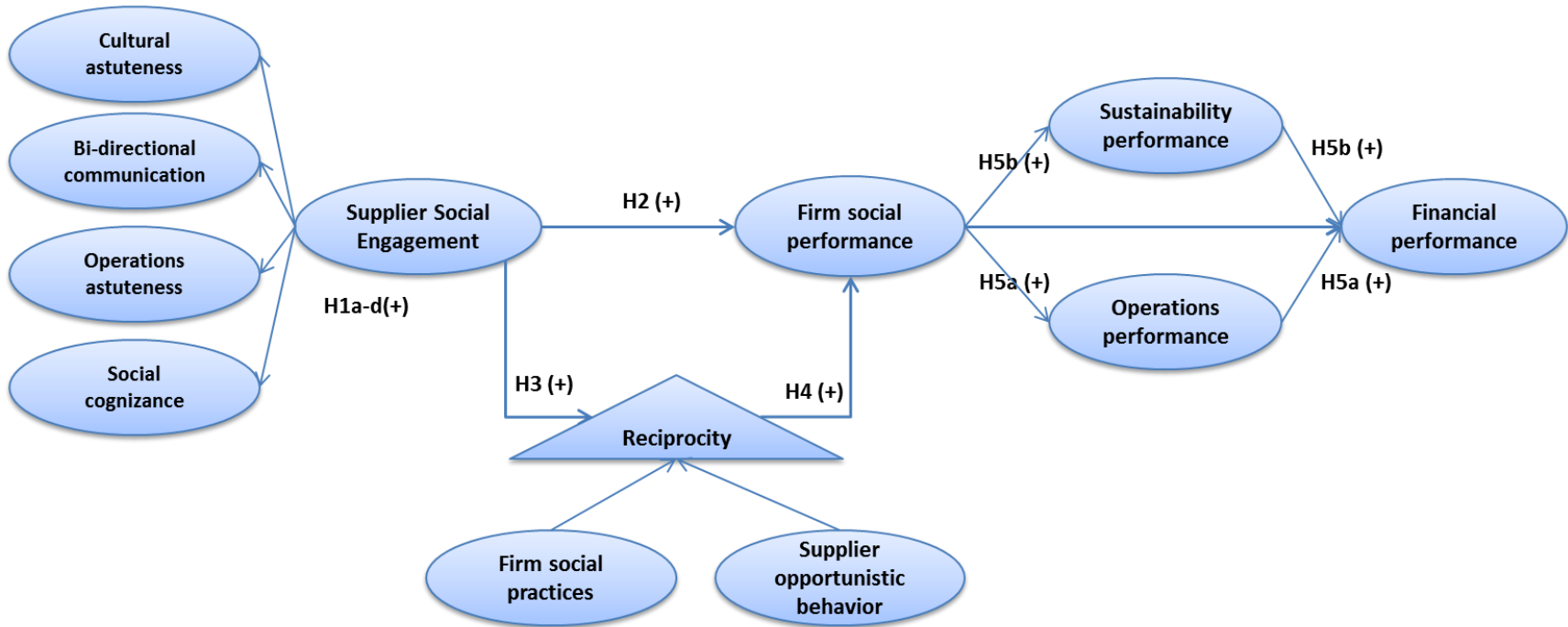


Figure 3-2: Hypothesized structural model

Chapter 4. Methodology

The focus of this chapter is on the methodology followed in the study, including discussion on sampling frame, descriptive statistics of the final sample and the evaluation of the measures for validity and reliability. The hypothesized relationships outlined in Chapter 3 can be tested using data collected through a large-scale survey. Groves et al. (2009) suggests that the most important elements of a questionnaire-based survey methodology include:

1. Identifying and selecting potential sample members.
2. Contacting sampled individuals and collecting data.
3. Evaluating and testing questions.
4. Adjusting survey estimates to correct for identified errors and biases.

Provided next is a detailed account of how each element outlined above was handled in this study.

4.1 Identifying potential sample firms and respondents

The theoretical model development, as outlined in Chapter 3, had a manufacturing focus with inclusion of exogenous constructs such as ‘bi-directional communication’, ‘operations astuteness’ etc. and endogenous performance-based constructs such as operations performance.

Moreover, the current model draws upon research findings based on manufacturing settings.

Similarly, the motivation of the study outlined examples from various manufacturing settings.

Therefore, the sampling frame for this study comprised of manufacturing firms operating in the U.S. The manufacturing sector comprises of various industries all starting from two-digit NAICS of 31, 32 or 33.

In order to develop a general understanding of the contribution of various industries to the U.S. manufacturing sector, I used data from the most recent wave of *Annual Survey of Manufacturers (ASM)*. ASM provides sample estimates of statistics for all manufacturing establishments with one or more paid employee (United States Census Bureau, 2011). The data on the contribution of the top ten manufacturing industries to the U.S. economy is presented in Table 4-1. The top ten manufacturing industries represent more than 80% of the activity in various categories. For example, *value added* represents the difference between the sales value of finished goods and the cost of acquiring raw materials. The top ten industries represent 80% of value added by the entire manufacturing sector in the U.S. Similarly, for *total value of shipments* and *total inventories*, the top ten industries represent 84% and 83% of all activity in U.S. My aim was to obtain most of the responses from the top ten industries, listed in Table 4-1, to have a strong case for adequately representing the U.S. manufacturing sector.

Table 4-1: Contribution of top ten industries to the U.S. manufacturing sector

3-digit NAICS	Industry Name	Total value of shipments	Value added	Total inventories
311	Food manufacturing	13%	12%	8%
322	Paper manufacturing	3%	4%	2%
324	Petroleum and coal products manufacturing	15%	6%	8%
325	Chemical manufacturing	14%	16%	13%
331	Primary metal manufacturing	5%	4%	6%
332	Fabricated metal product manufacturing	6%	8%	8%
333	Machinery manufacturing	7%	8%	10%
334	Computer and electronic product manufacturing	6%	9%	7%
335	Electrical equipment, appliance, and component r	2%	3%	3%
336	Transportation equipment manufacturing	13%	12%	17%
Total		84%	80%	83%
31-33	Manufacturing	100%	100%	100%

In addition to the focusing on the top ten manufacturing industries, at a firm level, I wanted to focus on firms that offer variance in terms of supply chain design, market competitiveness to ensure some responsiveness to multiple stakeholder groups, and having operations in both

developing and developed economies. All these factors have been established in prior research to effect adoption of socially responsible practices (Awaysheh & Klassen, 2010). Generally, large U.S. manufacturing firms fulfill most of the aforementioned criteria.

An added advantage of focusing on large U.S. manufacturing firms was the availability of archival financial and sustainability performance measures. Details on the use of archival data from databases, such as the KLD and COMPUSTAT, to extract performance metrics are provided in later sections of this chapter. For the time being, it is important to know that both primary and secondary data sources were used to validate the study hypotheses.

After finalizing the sampling frame for the firms, the next question related to selection of an ideal respondent. Since the constructs in the study were a mix of strategic and tactical questions related to supplier management, an ideal respondent was a person working in either purchasing or supply chain function of a firm and having a title of manager or above. In other words, I wanted people working in mid-to-top level management to respond to the survey. Ideal respondents would carry titles including, but not limited to, operations manager, supply chain manager, director operations, director supply operations, purchasing manager, director of purchasing and procurement director.

4.2 Data collection and sample

For data collection, I decided to use the services of Qualtrics Inc. Qualtrics Inc. is a private research software company, based in Provo Utah, who specializes in many kinds of online data collection. The survey was hosted online on Qualtrics server and was completely administered electronically. Electronic data collection has gathered momentum with the advancement of online tools and it is common for research studies in operations management to collect data

online (e.g. Braunscheidel & Suresh, 2009; Kristal, Huang, & Roth, 2010). Previous research has also found that responses of electronic surveys have advantages over print surveys due to efficient data collection and fewer missing responses (Boyer, Olson, Calantone, & Jackson, 2002).

The reason for selecting Qualtrics was their variety of actively managed market research panels that can cater to specific needs of individual projects. In the last few years, Qualtrics has become the preferred online survey platform with over 7,000 customers in 75 countries. Qualtrics has also partnered with more than 1,600 colleges and universities worldwide, including 99 of the top 100 business schools, including the Ivey Business School.

I provided Qualtrics the required sampling frame and ideal respondent characteristics. The project manager at Qualtrics confirmed availability of a panel that met the study requirements. During the project feasibility negotiations, Qualtrics also assured that each panel member had a confirmed respondent identity. Moreover, each panel had its own confirmation procedures including, but not limited to: TrueSample, Verity, SmartSample and USPS verification. All panel members had verified respondent addresses, demographic information, and email addresses.

Even though the panel members matched the required criteria of working for large manufacturing U.S. organizations and held positions in supply chain operations and / or purchasing roles, I still devised 13 pre-screening questions to be asked from each panel member. These pre-screening questions were asked before an invitation was sent to fill out the survey. The rationale for having the additional filters was to ensure that respondents who did not strictly match the sampling frame criteria were filtered out. These filters included questions related to firm annual sales, number of employees, firm industry, private vs. public firm, respondent title,

years of experience and knowledge of functional area. Two attention filters were also placed at different positions in the survey to filter out inattentive respondents. I estimated the average time to fill the survey to be between 20-25 minutes. Qualtrics also agreed to filter out respondents that took less than one-third of estimated time to complete the survey (i.e. respondents who took less than seven minutes to complete the survey were automatically filtered out). The purpose of the introduction of these filters assured quality of responses.

The target sample size for the study was 200 responses. This is based on the recommendations of Kline (2011) and Byrne (2010) for running a complex structural equation model. Kline (2011) suggests: *A “typical” sample size in studies where SEM is used is about 200 cases. This number corresponds to the approximate median sample size in surveys of published articles in which SEM results are reported. These include an earlier review by Breckler (1990) of 72 articles in personality and social psychology journals and a more recent review by Shah & Goldstein (2006) of 93 articles in management science journals.* However, Kline (2011) further notes that the advisable minimum size for the appropriate use of maximum likelihood estimate (MLE) is 100. Hair, Black, Babin, & Anderson (2009) state that even a small sample such as 50 cases may provide a valid result for MLE as long as the ratio between sample size and the number of parameters to be estimated is above 5:1. As per Kline (2011), the model stability would be doubtful when a ratio is less than this value.

After the initial launch of the survey, the data collection was temporarily paused when approximately 10% of responses (17 responses precisely) were received. At this time, I checked the data methodology and the data itself for consistency and adequacy. Once satisfied with the quality of responses, I asked Qualtrics to proceed with gathering more responses.

The Qualtrics panel that matched the sampling frame requirements had 1970 members. Of those 1970 panel members, 731 matched the sampling frame requirements by satisfying the pre-screening filters setup before the invitation to the survey. In total, 237 out of the 731 who qualified for the survey, finished the survey. Therefore, the overall response rate is calculated as 32.4% (237 completed responses from a total of 731 contacted). This response rate is higher as compared to other operations management studies who conducted online surveys when sampling senior officers (e.g. Braunscheidel & Suresh, 2009; Kristal et al., 2010; Sanders, 2007; Wong, Boon-itt, & Wong, 2011). As part of the survey instrument design, respondents were required to answer all questions before completing the survey. Therefore, no missing data analysis was required.

An additional requirement in the study was the availability of secondary performance measures. Out of the 237 complete responses, the financial information could be extracted for 166 firms from the COMPUSTAT database. Inclusion of sustainability performance measure from the KLD database reduced the number of firms with both financial and sustainability performance measures to 134 respondents. Therefore, for analysis purposes, I decided to split the sample in two groups; the first group comprised of 134 firms with both sustainability and financial performance metrics and the second group had 103 firms with only survey data. The hypothesized structural model in Figure 3-2 was tested using data from the first group having 134 firms. The data for the second group of 103 firms was used as a holdout sample to test the robustness of results (details on cross-validation of results are presented in Section 5.3). In order to test for the randomness of the responses between two groups, I compared annual sales, number of employees and respondents' years of experience for the two groups of 134 and 103 responses. The results were satisfactory with no major differences observed across the two

groups. I also carried out detailed invariance testing between the two groups for both measurement and structural invariance for cross-validation purposes.

4.2.1 Descriptive statistics

As discussed in the previous section, the main analysis was carried out for the group having 134 firms with both primary and secondary data. Therefore, all descriptive statistics in this section correspond to those 134 firms.

Table 4-2: Representation of manufacturing industries

3-digit NAICS	Industry Name	Total value of shipments	Value added	Total inventories	# of responses (N)
334	Computer and electronic product manufacturing	6%	9%	7%	25
325	Chemical manufacturing	14%	16%	13%	20
333	Machinery manufacturing	7%	8%	10%	9
336	Transportation equipment manufacturing	13%	12%	17%	22
311	Food manufacturing	13%	12%	8%	6
332	Fabricated metal product manufacturing	6%	8%	8%	4
331	Primary metal manufacturing	5%	4%	6%	4
335	Electrical equipment, and component manufacturing	2%	3%	3%	2
322	Paper manufacturing	3%	4%	2%	8
312	Beverage and tobacco product manufacturing	2%	4%	3%	3
339	Miscellaneous manufacturing	3%	4%	4%	6
-	Other manufacturing NAICS				25
Total		74%	82%	81%	134
31-33	Manufacturing	100%	100%	100%	100%

As outlined earlier, I wanted a sample that is representative of the U.S. manufacturing sector.

The final sample for the current study consisted of firms that represent industries having 82% of value added by all manufacturing industries in United States. Similarly, for *total value of shipments* and *total inventories*, the sample industries represent 74% and 81% of all activity in

United States. Table 4-2 provides the list of the manufacturing industries, their activity percentage and the number of firms in the sample belonging to each industry. The last column of Table 4-2 indicates that I was able to adequately cover the U.S. manufacturing sector by obtaining responses from manufacturing industries that have a significant impact on the overall manufacturing sector.

I also checked the representation of the final sample in the KLD database. The KLD database has sustainability performance metrics for the largest 3,000 U.S. firms by market capitalization. Out of the total of 3,000 firms, 1,026 are manufacturing firms. I was able to get data for 134 of the 1,026 manufacturing firms in KLD. Table 4-3 provides the breakdown of manufacturing firms by industry in the KLD dataset. From Table 4-3, it is evident that the sample adequately covers the largest U.S. manufacturing firms by industry.

Table 4-3: Firms in KLD database

3-digit NAICS	Industry Name	# of responses (N)	# of firms in KLD	%
334	Computer and electronic product manufacturing	25	253	10%
336	Transportation equipment manufacturing	22	68	32%
325	Chemical manufacturing	20	217	9%
333	Machinery manufacturing	9	91	10%
322	Paper manufacturing	8	24	33%
311	Food manufacturing	6	44	14%
339	Miscellaneous manufacturing	6	60	10%
331	Primary metal manufacturing	4	32	13%
332	Fabricated metal product manufacturing	4	39	10%
312	Beverage and tobacco product manufacturing	3	17	18%
335	Electrical equipment & component manufacturing	2	29	7%
-	Other manufacturing NAICS	25	152	16%
Total		134	1026	13%

Table 4-4 provides the firm-level descriptives for annual sales and number of employees. As expected, 83% of firms have annual sales exceeding a billion dollars while 97% of firms have more than 1,000 employees.

Table 4-4: Firm-level descriptive statistics

Annual Sales	N	%
\$200 million to \$500 million	5	4%
\$500 million to \$1 billion	18	13%
\$1 billion to \$5 billion	50	37%
More than \$5 billion	61	46%
Grand Total	134	100%

No. of Employees	N	%
Between 100 – 1,000	4	3%
Between 1,000 – 5,000	29	22%
Between 5,000 – 10,000	23	17%
More than 10,000	78	58%
Grand Total	134	100%

Table 4-5: Respondent title

	N	%
Vice President	12	9%
General Manager	15	11%
Director	21	16%
Manager	69	51%
Other	17	13%
Total	134	100%

Table 4-5 outlines the breakup of the title for the respondents and 83% of respondents carried managerial titles. Figure 4-1 presents statistics on years of experience in total and with the current firm. On average, respondents had 24 years of experience in total and 15 years with their current company. The statistics in Table 4-5 and Figure 4-1 indicate that respondents were both

knowledgeable about their functional area and their firms, thus minimizing respondent bias that is generally associated with questionnaire-based surveys.

Figure 4-1: Respondent years of experience



4.2.2 Assessing biases in survey research

Common method bias refers to measurement error resulting from variance due to the measurement method utilized (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). In order to reduce the impact of common method bias, while administering the survey, I strived for knowledgeable respondents (refer to Table 4-5 and Figure 4-1), guaranteed respondents complete anonymity (details in Appendix A: ‘Letter of Information’ to respondents), and asked respondents to answer the questions as best they could (Dillman, 1978). After the survey results were obtained, Harmon’s Single Factor Test was employed to examine for common method bias. This test was conducted by loading all items in the study into an exploratory factor analysis and examining the un-rotated factor solution (Podsakoff et al. 2003). A single factor did not emerge, thus hinting at minimal common method bias.

The validity of self-reported performance measures is also a common concern in studies using data collected from a single survey respondent (Malhotra, Kim, & Patil, 2006). The validity of a participant's responses to performance related questions can be influenced by social desirability to position his or her organization in a positive light. Following Malhotra et al. (2006) recommendations, two marker variable items were included in the survey instrument to test for the validity of the self-reported performance measures. These marker variables asked respondents to assess their firm's return-on-assets (ROA) and return-on-sales (ROS) in comparison to their competitors. These responses were correlated with the data extracted from the COMPUSTAT database for each industry group from a 3-digit NAICS code. The measures were found to be significantly correlated to each other indicating a lack of social desirability bias.

The final sample was tested for the presence of non-response bias by comparing the early respondents to late respondents. Using this method, the late responses are considered to be a proxy for the non-respondents (Armstrong & Overton, 1977). I divided the responses into early versus late respondents based on cut-off period of two weeks. The total duration of data collection was eight weeks. Several t-tests were conducted across annual sales, number of employees and years of experience. No significant differences were found indicating that the data does not have a significant amount of non-response bias.

4.3 Survey background & measures

The complete survey is provided in Appendix B. All questions in the surveys were tested on a 7-point Likert scale with appropriate anchors. The unit-of-analysis in this study is the buyer-supplier dyad and the respondents were asked to think of an important supplier that is operating

in an emerging economy and record responses based on their experiences with that supplier. Most questions in the survey instrument related to the specific buyer-supplier dyad.

4.3.1 Measures

The final survey contained a mix of established and new constructs in the operations management literature. This section provides a brief overview of each construct employed in the study while Section 4.5 outlines the scale development process for the new constructs in greater detail.

Each of the four dimensions of SSE capability is regarded as a standalone set of resources. The three dimensions of cultural astuteness, operations astuteness and social cognizance are new to the field of operations management research and fourth dimensions of bi-directional communication is an existing scale developed by Paulraj, Lado, & Chen (2008).

The measure adopted for supplier opportunistic behavior is also an existing scale that was originally developed by Jap (1999) to represent ex-post opportunism. Ex-post opportunism refers to supplier's opportunistic behavior after the initiation of the buyer-supplier relationship. A refined version of the scale was later introduced by Jap & Anderson (2003). In practice, the scale has several elements related to explicit behavior such as distortion of information and more subtle behaviors such as misrepresentation of information by not fully disclosing (Jap & Anderson, 2003).

The measure for supplier-centric firm social practices consisted of items that were obtained from the social accountability standard *SA8000* (Social Accountability International, 2008). The standard provides details on various social issues that could exist in supply chain such as child labor, forced labor, occupational safety & health (OSH) concerns and working hours and

remuneration issues. The items that made up the firm social practices measure aimed at assessing a firm’s efforts towards developing a responsible supply chain.

The measure of firm social performance has items that help assess a firm’s improvement in developing a socially responsible supply chain. The measure comprises of items related to widening the scope of social auditing, devising stringent targets and improving systems for new supplier assessment. All items for ‘firm social performance’ were self-developed (more details are provided in Section 4.5)

In order to measure operations performance, I used items used in prior research, related to product quality, delivery and flexibility (Kristal et al., 2010; Rosenzweig, Roth, & Dean, 2003; Siemsen, Roth, & Balasubramanian, 2008). Based on Kristal et al. (2010), I operationalized quality as conformance to specifications, delivery speed as the capability to deliver products in a short time, and process flexibility as the ability to adjust or modify operational processes to speedily accommodate changes (Miller & Roth, 1994).

Table 4-6 outlines the initial pool of items for both new and established constructs and it also provides details of the relevant literature that helped develop the constructs used in this dissertation.

Table 4-6: Illustrative literature on constructs in this dissertation

	Cultural Astuteness	References
	<i>Definition: The ability of a firm to recognize the cultural differences among the two partnering firms and plan for social engagement accordingly</i>	
	<i>Our firm:</i>	
1.	: makes an effort to understand the organizational culture of our supplier	Self-developed
2.	: values the importance of understanding our supplier’s organizational culture for fostering a healthy relationship	Self-developed

3.	: believes that cultures affect the way firms conduct their business	Self-developed
4.	: is mindful that our supplier's way of doing business could be different than ours	(Johnson, Cullen, Sakano, & Takenouchi, 1996); (Lohtia, Bello, & Porter, 2009)
5.	: generally is willing to adapt to cultural differences between us and our supplier	
6.	: is aware that the norms for business communication could be different in our supplier's culture	
7.	: undertakes conscious steps to familiarize ourselves with the supplier country's legal and cultural environment	
8.	: is sensitive to the difficulties we may encounter when doing business in our supplier's country	(LaBahn & Harich, 1997); (Lohtia et al., 2009); (Skarmas, 2006)
9.	: understands how our supplier conducts business in its country	
Bi-directional communication		
References		
Definition: the ability of a firm to communicate effectively with its suppliers		
Our firm and our supplier:		
1.	: have frequent contacts on a regular basis	(Prahinski & Benton, 2004); (Paulraj et al., 2008); (Mohr & Nevin, 1990)
2.	: have open and two-way communication	
3.	: believe in having informal communication	
4.	: have several different channels to communicate	
5.	: influence each other's decisions through discussion rather than formal requests	
Operations Astuteness		
References		
Definition: the ability of a firm to recognize the operational constraints of its suppliers and plan for engagement accordingly		
Our firm:		
1.	: is actively engaged in understanding and managing supplier capacity	(Brockman & Morgan, 2003)
2.	: information acquisition capability for supplier's operations is proficient	
3.	: discussions with the supplier on production bottlenecks results in useful information sharing	

4.	: always has an employee who understands supplier operations well	
5.	: commits our supplier to regular sharing of operations information such as inventory levels, daily production, and weekly production plan.	
6.	: uses site visits as a means of evaluating the state of our supplier's manufacturing operations	Self-developed
7.	: has a fairly good idea about our supplier's demand seasonality	Self-developed
8.	: displays a high level of competence in acquiring supplier capacity information	Self-developed
	Social Cognizance	References
	<i>Definition: a firm's knowledge or recognition of social issues throughout their supply chain</i>	
	<i>Our firm:</i>	
1.	: supply chain personnel are aware of various international social accountability standards such as SA8000 or the ILO's eight core conventions on labor and human rights.	Self-developed
2.	: seeks information sharing with our industry peers on potential social issues that could exist in our supply chains	Self-developed
3.	: consults industry peers to advance our knowledge of potential social issues in supply chains	Self-developed
4.	: conducts on-going research on acceptable / unacceptable social practices in supply chains	Self-developed
5.	: regularly updates its supplier 'Code of Conduct' on the basis of revisions to international standards such as the ILO's eight core conventions and / or SA8000	Self-developed
6.	: supplier 'code of conduct' is based on an industry-wide code of conduct standard	Self-developed
7.	: supplier 'code of conduct' has operational-level details on social issues such as allowable working hours, labor practices and discrimination.	Self-developed
8.	: newsletter has a section dedicated to awareness of social issues within our supply chain	Adapted:(Hult, Hurley, Giunipero, & Nichols, 2000)
9.	: is fast to detect changes in public opinion on acceptable / unacceptable social practices	

	Firm Social Practices	References
	Definition: <i>Indicates buying firm's efforts to ensure that its suppliers run their operations in a socially responsible manner</i>	
	Our firm:	
1.	: asks our supplier to maintain overtime wage records	Adapted from: Social accountability standard SA8000
2.	: ensures that our supplier understands the overtime related labor laws in its country	
3.	: ensures that supplier's wages are in alignment with the minimum wage set by its country's labor laws	
4.	: asks our supplier to maintain employment files for all personnel on its facilities	
5.	: asks our supplier to ensure that its employees understand their wage structure as indicated on their wage slips and / or payroll records	
6.	: ask our supplier to provide evidence of complying with local / national laws on use of under-age workers	Adapted from: Social accountability standard SA8000
7.	: ask our supplier to maintain records of under-age workers hired under apprenticeship programs	
8.	: ask our supplier to comply with its country's labor law regarding the number of hours worked each week by under-age employees in apprenticeship programs	
9.	: ask our supplier to maintain documentary evidence for proof of age upon recruitment of new employees (such as copies of birth certificates or any other government issued identification documents)	
10.	: ask our supplier to ensure that it does not allow the practice of holding original documents belonging to employees (such as passports, work permits or birth certificates)	Adapted from: Social accountability standard SA8000
11.	: ask our supplier to ensure that its employees are not asked to deposit money, to be returned to them upon completion of a fixed employment period	
12.	: ask our supplier to ensure that its employees do not have to pay fees or for training programs undergone while with the company	
13.	: ask our supplier to ensure that its employees do not have a large outstanding or long-running debt with the supplier's company, which they have no other way to pay back except to keep working	
14.	: ask our supplier to provide evidence that a comprehensive occupational safety & health (OSH) management system exists	Adapted from: Social

15.	: ask our supplier to provide evidence that management at all levels can explain their responsibilities with regard to the company’s OSH program	accountability standard SA8000
16.	: ask our supplier to provide evidence that emergency procedures exist, including records of regular emergency drills	
17.	: ask our supplier to provide evidence that all OSH related documentation and records are complete	
18.	: ask our supplier to provide evidence that a mechanism exists to encourage input from workers on OSH issues	
Supplier Opportunistic Behavior		
References		
<i>Definition: Supplier Opportunistic Behavior is defined as self-interest seeking with guile after the buyer-supplier relationship is underway</i>		
<i>In a buyer-supplier relationship, sometimes suppliers can exhibit opportunistic behavior when a problem occurs. When a problem occurs, how often will the supplier do the following? Our supplier:</i>		(Jap & Anderson, 2003)
1.	: makes hollow promises	
2.	: is aloof toward us	
3.	: “window dresses” its efforts to improve	
4.	: expects us to pay for more than our fair share of the costs to correct the problem	
5.	: is unwilling to accept responsibility	
6.	: makes false accusations	
7.	: provides false information	
8.	: fails to provide proper notification of a problem	
Firm Social Performance		
References		
<i>Definition: This section explores social performance measures of the buyer firm</i>		
<i>In the last two years, our firm has:</i>		
1.	: met its goals of developing and maintaining a socially responsible supply chain	Self-developed
2.	: been able to ensure adherence to our supplier code of conduct by most tier-1 suppliers	Self-developed

3.	: expanded the number of categories against which supplier’s social performance is assessed	Self-developed	
4.	: screened more suppliers as compared to previous years for their code of conduct compliance	Self-developed	
5.	: expanded its list of social performance metrics for its suppliers	Self-developed	
6.	: conducted site audits for most of its tier 1 suppliers	Self-developed	
Operations Performance			
References			
<i>For each of the items listed below, how does your firm compare with its primary competitors?</i>			
Quality			
1.	Conformance quality (i.e., the degree to which a product’s operating characteristics meet established standards)	(Kristal, Huang, & Roth, 2010; Menor et al., 2007; Rosenzweig et al., 2003; D’Souza and Williams, 2000; Roth, 1996a; Roth et al., 1989; Roth and Miller, 1988).	
2.	Product durability (i.e., the amount of time or use before the product breaks down and replacement is preferred to continued repair)		
3.	Product reliability (i.e., the probability of a product malfunctioning or failing within a specified time period)		
4.	Performance quality (i.e., a product’s primary operating characteristics)		
Delivery Speed			
5.	Being able to provide fast-response deliveries from order to end customer		
6.	Order fulfillment lead time		
7.	Delivery lead time		
Process Flexibility			
8.	Ability to rapidly change production volumes		
9.	Manufacture broad product mix within same facilities		
10.	Ability to rapidly modify methods for materials		
11.	Ability to rapidly modify methods for components		

4.3.2 Use of secondary data

One of the contributions of the study is the simultaneous use of primary and secondary data in the model to validate its hypotheses. In order to link survey-based constructs to social performance of firms, I used the Environmental, Social and Governance factors (ESG) database provided by Morgan Stanley Capital International (MSCI Sustainability Indices, 2013). Financial performance data for firms was extracted using the Compustat database.

4.3.2.1 KLD database

ESG Indices are the continuation of indices developed over the past 20 years by Kinder, Lydenberg, and Domini (KLD), which became part of Morgan Stanley Capital International following its acquisition in June 2010 of RiskMetrics, which had acquired KLD in 2009 (Tang, Hull, & Rothenberg, 2012). The universe of companies covered by the KLD database since 2003 is the largest 3,000 U.S. companies by market capitalization.

The KLD database ratings model includes over 100 indicators spread over seven ESG categories as described below (ESG stands for environment, social and governance categories):

1. Environment
2. Social:
 - a. Community
 - b. Human Rights
 - c. Employee Relations
 - d. Diversity
 - e. Customers
3. Governance

The KLD database utilizes a binary representation for the ESG ratings. If a company DOES meet the criteria established for a rating, this is indicated with a “1” in the corresponding cell in the

excel spreadsheet. If a company does NOT meet the criteria established for a rating, this is indicated with a “0”.

Table 4-7: KLD methodologies employed in management research

Research Paper	Ruf, Muralidhar, & Paul (1998)	Waddock & Graves (1998)	Hull & Rothenberg (2008)	Chen & Delmas (2011)
Study objective / Research Question	The study proposes a methodology for the development of a systematic measure of CSP using the Analytic Hierarchy Process.	The study’s objective is to establish an empirical linkage between CSP and CFP.	The study proposes that CSP enhances financial performance by allowing the firm to differentiate, and that this effect is moderated both by innovation and the level of differentiation in the industry.	The study provides a critical evaluation of current aggregation approaches and proposes a new methodology based on DEA approach to compute a CSP index.
Operationalization of CSR score	Aggregation of weighted KLD dimensions	Aggregation of weighted KLD dimensions	Aggregation of KLD dimensions, all having equal weights	An input-oriented DEA model, where the objective is to minimize CSP concerns (the inputs) given current CSP strengths (the outputs)
Weighting Scheme Method	surveys conducted to devise a weighting scheme (N=101); respondents included public officers, executives of nonprofit organizations, and managerial accountants	Weighting scheme based on the opinion of three experts	Equal weights for all KLD categories	DEA model assigned weights.
Aggregation Methodology	‘Concerns’ are subtracted from ‘Strengths’ for each category and the weighted score on each category is summed to a final CSR score	‘Concerns’ are subtracted from ‘Strengths’ for each category and the weighted score on each category is summed to a final CSR score	‘Concerns’ are subtracted from ‘Strengths’ for each category and the score on each category is summed to a final CSR score (un-weighted)	Ratio of weighted ‘strengths’ to weighted ‘concerns’ and distance from efficient frontier is calculated.
Numerical form of Aggregation	$\text{KLD-CSP score } j = \sum_{i=1}^m \rho_i (y_{ji} - x_{ji}).$ <p>Where, y_{ji} and x_{ji} denote firm j’s number of strengths and concerns in CSP category i, respectively; ρ_i is the weight for category i.</p>	$\text{KLD-CSP score } j = \sum_{i=1}^m \rho_i (y_{ji} - x_{ji}).$ <p>Where, y_{ji} and x_{ji} denote firm j’s number of strengths and concerns in CSP category i, respectively; ρ_i is the weight for category i.</p>	$\text{KLD-CSP score } j = \sum_{i=1}^m \rho_i (y_{ji} - x_{ji}).$ <p>Where, y_{ji} and x_{ji} denote firm j’s number of strengths and concerns in CSP category i, respectively; ρ_i is equal to ‘1’.</p>	$\text{Max } \sum_{r=1}^s u_r y_{1r} / \sum_{i=1}^m v_i x_{1i}$ <p>Where, u_r and v_i are the weights attached to the r^{th} desirable and the i^{th} undesirable indicator, respectively and x and y are concerns and strengths respectively</p>

The KLD ratings have been used to calculate a firm’s sustainability using a variety of methods, a brief account of which is provided in Table 4-7. In this thesis, I followed the most commonly used methodology suggested by Hull & Rothenberg (2008). Using the Hull & Rothenberg (2008) method, the strengths are given a +1 score and the concerns are given a -1 score. The aggregate of all the strengths and the concerns for all dimensions provides the overall KLD score, representing a firm’s aggregate sustainability performance. Table 4-8 lists the strengths and concerns for all ESG indicators in the KLD database.

Table 4-8: ESG indicators in the KLD database

	Strengths	Concerns
Community	Support for Education (from 1994) Non-US Charitable Giving Volunteer Programs (from 2005) Community Engagement Charitable Giving Innovative Giving Support for Housing Community Other Strength	Investment Controversies Negative Economic Impact Tax Disputes Community Other Concerns
Customers	Quality R+D-Innovation Benefits to Economically Disadvantaged Product Other Strengths Access to Capital	Product Safety Marketing-Contracting Concern Antitrust Product Other Concerns Customer Relations
Diversity	Gay and Lesbian Policies Employment of Underrepresented Groups CEO Promotion Board of Directors Work-Life Benefits Women and Minority Contracting Employment of the Disabled Diversity Other Strength	Non-Representation Board Diversity Controversies Diversity Other Concerns Board of Directors - Minorities
Employees	Health and Safety Strength Supply Chain Policies, Programs & Initiatives Union Relations Cash Profit Sharing	Retirement Benefits Concern Supply Chain Controversies Union Relations Health and Safety Concern

	<p>Employee Involvement Retirement Benefits Strength Emp. Relations Other Strength Compensation & Benefits Employee Relations Professional Development Human Capital Management</p>	<p>Workforce Reductions Emp. Relations Other Concerns Child Labor</p>
Environment	<p>Beneficial Products and Services Pollution Prevention Recycling Clean Energy Property, Plant, Equipment (through 1995) Environment Other Strength Management Systems Strength Water Stress Biodiversity & Land Use Raw Material Sourcing</p>	<p>Climate Change (from 1999) Negative Impact of Products and Services Land Use & Biodiversity Hazardous Waste Regulatory Problems Non Carbon Releases Ozone Depleting Chemicals Substantial Emissions Agriculture Chemicals Environment Other Concerns Supply Chain Management Water Management</p>
Governance	<p>Transparency Strength Political Accountability Strength (from 2005) Limited Compensation Ownership Strength Corp. Gov Other Strength Public Policy Strength Corruption & Political Instability Financial System Instability</p>	<p>Accounting Concern (from 2005) Transparency Concern (from 2005) Political Accountability Concern (from 2005) Corp. Gov Other Concerns Governance Structures Controversies High Compensation Ownership Concern Public Policy Concern Controversial Investments Business Ethics</p>
Human Rights	<p>Indigenous Peoples Relations Strength (from 2000) Labor Rights Strength (from 2002) Human Rights Other Strength</p>	<p>Burma Concern (from 1995) Labor Rights Concern (from 1998) Indigenous Peoples Relations Concern (from 2000) Human Rights Other Concerns Operations in Sudan Freedom of Expression & Censorship Human Rights Violations</p>

4.3.2.2 Financial data from Compustat

In addition to social performance measure, several financial performance measures were included in the analysis. These measures were calculated using the financial data extracted from the Compustat database. The main measure of financial performance used in the analysis was return-on-sales (ROS). ROS is net income before interest and tax divided by sales and it reflects how well the firm can generate sales using its resources (Azadegan, Patel, Zangouinezhad, & Linderman, 2013). Therefore, ROS reflects not only the efficient use of internal resources, but also the synergy between the firm's different business functions (Lanier, Wempe, & Zacharia, 2010). In addition to ROS, the model was also tested for return-on-assets (ROA) and gross margin (GM) as dependent variables. The details of the analysis employing ROA and GM as dependent financial performance measures are provided in the section on post-hoc analysis in Chapter 5.

4.3.2.3 Control variables from secondary sources

Several control variables were added to ensure robustness of results. Controls at two levels were included: first, a set of firm-level controls and second, a set of industry-level controls were added to the analysis. Since social and financial performance measures are the dependent variables in the model, I needed to control for factors influencing these measures. Consistent with previous research, the firm-level control variables included prior performance related measures (Jayachandran, Kalaiganam, & Eilert, 2013b). For prior performance, aggregate sustainability performance, ROS, ROA and GM figures from the year 2011 were included. This year represents a two-year gap from the most recent financial figures. These measures have been widely employed in management research to control for prior financial performance (e.g. Hull & Rothenberg, 2008; Lanier, Wempe, & Zacharia, 2010).

McWilliams & Siegel (2000) stress that an important determinant of the profitability of a firm is its investment in research and development (R&D). The study adds that excluding R&D in statistical models is especially problematic, because there is a long standing theoretical literature linking investment in R&D to improvements in long-run economic performance. Therefore, I added R&D expense for each firm as a control variable for its financial performance. It is also suggested in the literature that R&D investment and CSR are likely to be correlated, because both are associated with product and process innovation (McWilliams & Siegel, 2000).

For industry-level controls, three commonly used metrics of environmental munificence, environmental dynamism, and environmental complexity were calculated (Fernhaber & Patel, 2012). All three industry-level measures were assessed over a five-year window through data obtained from the COMPUSTAT database. In order to allow for comparisons across appropriate industry sectors, the North American Industrial Classification System (NAICS) codes were used at the three-digit level and yearly aggregated sales were computed for each industry group.

Environmental munificence is a measure of growth in the industry while environmental dynamism is a measure of volatility in the industry (Keats & Hitt, 1988). These measures were obtained by regressing aggregated industry sales over recent five years. The regression coefficient (β) for sales divided by the average industry sales over five years provided munificence values while the standard error of regression coefficient divided by average sales provided dynamism values. Higher β represents higher growth and higher standard error represents greater turbulence in the industry.

Environmental complexity measures the degree of concentration in an industry (Keats & Hitt, 1988). It is generally computed by taking the sales of top four firms in an industry and dividing

the sum by the total sales of the industry. Higher numbers represent less complexity while lower numbers represent high complexity indicating presence of greater number of competitors in an industry.

4.4 Scale development methodology

DeVellis, (2003) defines scales as “*measurement instruments that are collections of items combined into a composite score and intended to reveal levels of theoretical variables not readily observable by direct means*”. Since some of the constructs in this study have not been established within the context of operations management literature, I applied Menor and Roth’s (2007) rigorous, two-stage approach for new multi-item measurement scale development. The two-stage approach is consistent with Hinkin, (1998), Hensley, (1999) and Devellis, (2011).

The first stage comprised of item generation for the new constructs where both theory and expert opinion was used to develop a list of items. The second stage consisted of questionnaire administration where the finalized survey was sent to the sample under study. In this step, internal consistency, convergent and discriminant validity of the scales was also tested using results from a confirmatory factor analysis.

4.4.1 Stage 1: Item generation

Item generation is the most critical step in the scale development process and theory along with context specificity are regarded as an aid to generate the initial pool of items (Devellis, 2011).

Item generation also provides the basis for content validity as good items capture specific domain of interest and contain no extraneous content (Hinkin, 1995). As the constructs in the study are driven by theory, I used a deductive approach to generate the initial pool of items; in line with suggestions of Hinkin (1995), to help assure content validity in the final scales. Domain

sampling theory states that it is not possible to measure the complete domain of interest, but that it is important that the sample of items drawn from potential items adequately represent the construct under examination (Ghiselli, Campbell, & Zedeck, 1981). Hence, in order to come up with a pool of relevant items, I carried out the item generation phase in two distinct steps; first step being the generation of items using existing literature and semi-structured interviews and the second being a formal Q-sort process for sorting items into respective constructs.

Initially, I relied on several streams of literature to generate an initial pool of items. I needed to generate items for three dimensions of SSE capability. Out of the four proposed SSE dimensions, three are new to the operation management literature and they are *cultural astuteness*, *operations astuteness* and *social cognizance*. For SSE dimensions, strategy literature on stakeholder identification, their engagement and the relevance of stakeholder engagement to an organization was reviewed. Simultaneously, literature on organizational culture and operational collaboration aided the generation of items specific to SSE dimensions.

In order to generate a list of items for supplier-centric firm social practices and firm social performance, I reviewed the methodology behind development of three industry standards on socially responsible practices: the social accountability standard *SA8000* (Social Accountability International, 2008), *KLD* (Kinder et. al, 1993) and *Jantzi* (Sustainalytics, 2011). The study of these standards along with literature review of studies related to socially responsible operations helped to generate an initial pool of items. Social accountability standards provides useful guidelines for firms aiming to get *SA8000* certification while *KLD* and *Jantzi* are scales which are composite indicators of firm performance on a number of socially relevant dimensions for North-American firms. The *KLD* and *Jantzi* ratings have been available for many years and have gained wide acceptance as social screens among investors and investment analysts.

I complemented the literature review by studying corporate sustainability reports of some of the best corporate citizens. The list of the best corporate citizens for the year 2014 was obtained from the Corporate Responsibility Magazine (CR Magazine, 2014). The corporate sustainability reports helped me understand how firms are trying to engage stakeholders in general and their suppliers in specific. In addition, the review of the reports also provided a practitioner's perspective on how firms view social practices and social performance.

Once the initial pool of items was generated, I decided to conduct interviews with some industry experts. The purpose of the interviews was twofold; first, to gather insights on the relevance and plausibility of the research model and second to substantiate the list of items generated for relevance, clarity and substance. A total of eight semi-structured interviews with practitioners were conducted. Based on literature review and findings of semi-structured interviews, an initial pool of items was generated.

In the second step of the item generation exercise, the list was subjected to two rounds of item sorting exercise, more commonly known as the Q-sort method. It is important to note that the Q-sort exercise was carried out for only the new constructs in the study. Specifically, these constructs are *Cultural Astuteness*, *Social Cognizance*, *Operations Astuteness*, and *Firm Social Performance*. The initial list consisted of 32 items. Round one of the Q-sort consisted of nine judges, all of them being doctoral students specializing in operations management, strategy or sustainability. Round two of the Q-sort comprised of a relatively larger set of sixteen judges, fourteen of them being doctoral students and two Professors of Operations Management. The use of convenience sampling is justified in a Q-sort as the objective is not to form measurement scales per se, but to use a non-survey sample to indicate a preliminary/tentative item level adequacy (Menor & Roth, 2007).

For each Q-sort round, judges were provided with a list of randomly ordered items and construct definitions. Judges were asked to read the construct definitions and then to match each randomized item with the one construct that it best fit. The judges had the option to complete the exercise online using Qualtrics Q-sort functionality or to complete the exercise using a self-designed excel file. After the first round of Q-sort, each item was assessed and a decision was made either to retain the item in its current form or revise the wording or drop the items from the item pool. Items where there was sufficient agreement exhibited between judges (70% or higher) were retained. For other items, minor adjustments were made to their wording to enhance their clarity. At the end of the Round one, five items were dropped from the list and the remaining 27 were subjected to the second round of Q-sort. At the end of the second round, agreement among judges was assessed again and items having highest agreement were retained. At the end of round two, another eight items were dropped and the remaining 19 items were made part of the final survey. The items ordered by their respective constructs are provided in Table 4-7.

Although there are no defined rules on how many items should make up a scale, it is recommended to keep a measure short to avoid response bias caused by fatigue or boredom of respondents (Schmitt & Stults, 1986). Adequate internal consistency of measures can be obtained with as few as three items and the incremental impact of adding more items is considerably less on scale reliability (Bickman & Rog, 2008). All scales in this study consisted of four or more items (details in Table 4-7).

Table 4-9: Q-sort summary

Item No.	Construct Name	Items	Actions
1	Cultural Astuteness	Our firm makes an effort to understand the organizational culture of our supplier	Dropped after Round 2
2	Cultural Astuteness	Our firm values the importance of understanding our supplier's organizational culture for fostering a healthy relationship	Retained for Survey
3	Cultural Astuteness	Our firm believes that cultures affect the way firms conduct their business	Retained for Survey
4	Cultural Astuteness	Our firm is mindful that our supplier's way of doing business could be different than ours	Dropped after Round 1
5	Cultural Astuteness	Our firm generally is willing to adapt to cultural differences between us and our supplier	Retained for Survey
6	Cultural Astuteness	Our firm is aware that the norms for business communication could be different in our supplier's culture	Retained for Survey
7	Cultural Astuteness	Our firm undertakes conscious steps to familiarize ourselves with the supplier country's legal and cultural environment	Dropped after Round 2
8	Cultural Astuteness	Our firm is sensitive to the difficulties we may encounter when doing business in our supplier's country	Dropped after Round 1
9	Cultural Astuteness	Our firm understands how our supplier conducts business in its country	Dropped after Round 2
1	Operations Astuteness	Our firm is actively engaged in understanding and managing supplier capacity	Retained for Survey
2	Operations Astuteness	Our firm's information acquisition capability for supplier's operations is proficient	Dropped after Round 2
3	Operations Astuteness	Our firm's discussions with the supplier on production bottlenecks results in useful information sharing	Retained for Survey
4	Operations Astuteness	Our firm always has an employee who understands supplier operations well	Retained for Survey

5	Operations Astuteness	Our firm commits our supplier to regular sharing of operations information such as inventory levels, daily production, and weekly production plan	Retained for Survey
6	Operations Astuteness	Our firm uses site visits as a means of evaluating the state of our supplier's manufacturing operations	Retained for Survey
7	Operations Astuteness	Our firm has a fairly good idea about our supplier's demand seasonality	Dropped after Round 2
8	Operations Astuteness	Our firm displays a high level of competence in acquiring supplier capacity information	Dropped after Round 1
1	Social Cognizance	Our firm's supply chain personnel are aware of various international social accountability standards such as SA8000 or the ILO's eight core conventions on labor and human rights	Retained for Survey
2	Social Cognizance	Our firm seeks information sharing with our industry peers on potential social issues that could exist in our supply chains	Dropped after Round 1
3	Social Cognizance	Our firm consults industry peers to advance our knowledge of potential social issues in supply chains	Retained for Survey
4	Social Cognizance	Our firm conducts on-going research on acceptable / unacceptable social practices in supply chains	Dropped after Round 2
5	Social Cognizance	Our firm regularly updates its supplier 'Code of Conduct' on the basis of revisions to international standards such as the ILO's eight core conventions and / or SA8000	Retained for Survey
6	Social Cognizance	Our firm's supplier 'code of conduct' is based on an industry-wide code of conduct standard	Retained for Survey
7	Social Cognizance	Our firm's supplier 'code of conduct' has operational-level details on social issues such as allowable working hours, labor practices and discrimination	Retained for Survey
8	Social Cognizance	Our firm's newsletter has a section dedicated to awareness of social issues within our supply chain	Dropped after Round 2
9	Social Cognizance	Our firm is fast to detect changes in public opinion on acceptable / unacceptable social practices	Dropped after Round 2
1	Firm Social Performance	Our firm has met its goals of developing and maintaining a socially responsible supply chain	Dropped after Round 1

2	Firm Social Performance	Ensuring adherence to our firm’s supplier code of conduct by tier-1 suppliers	Retained for Survey
3	Firm Social Performance	Screening suppliers for potential social concerns during contract negotiations	Retained for Survey
4	Firm Social Performance	Conducting site audits of tier-1 suppliers for code of conduct conformance	Retained for Survey
5	Firm Social Performance	Expanding the list of social performance metrics for suppliers	Retained for Survey
6	Firm Social Performance	Setting stringent targets for social performance of suppliers	Retained for Survey

4.4.2 Stage 2: Survey administration

The second stage of item generation consisted of questionnaire administration where the finalized survey was sent to the sample under study. This stage has already been discussed in detail in Section 4.2.

4.4.3 Measurement model

As outlined in the previous section, the total complete responses received were 237. The desire to use the secondary performance data for sustainability and financial performance reduced the effective sample size to 134. The measurement scales in the study were tested for unidimensionality, reliability, convergent validity and discriminant validity using the sample of 134 firms. I used the remaining 103 responses as a holdout sample to verify the results of the study as part of post-hoc analysis and to check robustness of the theoretical model.

I employed confirmatory factor analysis (CFA) using AMOS v21.0.0 to evaluate the validity and reliability of the multi-item measurement scales (Anderson & Gerbing, 1988). CFA is the preferred approach in recent operations management studies, to evaluate convergent and discriminant validity of constructs (e.g. Menor, Kristal, & Rosenzweig, 2007; Siemsen, Roth, & Balasubramanian, 2008; Kristal, Huang, & Roth, 2010), because many authors have identified

several limitations in the exploratory factor analysis (Paiva, Roth, & Fensterseifer, 2008). These limitations include, but are not limited to, threats to validity due to cross-loading in a multiple-indicator measurement model (Anderson & Gerbing, 1988) and limitation of Cronbach's alpha under certain conditions (Kline, 2011; Byrne, 2010).

As recommended, the CFA was run separately for the exogenous and endogenous constructs (Kline, 2011). The exogenous constructs comprised of multi-item measurement scales for four dimensions of SSE i.e. cultural astuteness, bi-directional communication, operations astuteness and social cognizance. The endogenous constructs were the supplier-centric firm social practices, firm social performance and operations performance. The results of the confirmatory factor analysis are presented in Table 4-8. There are several goodness-of-fit indices available in the AMOS platform and different indices have been used in previous research. However, the most widely used indices are CFI, PGFI, TLI and RMSEA and the same have been used as indicators for model-fit in this study. Other indices were also checked and they exhibited similar results; however, I have excluded them from the discussion for the purpose of brevity.

Lee et. al, (1990) proposed the comparative fit index (CFI) as a measure of complete covariation in the data and a value greater than 0.90 is considered representative of a well-fitting model (P M Bentler, 1992). The CFI values for the measurement models of SSE dimensions, social practices and performance all exceed 0.9, ranging from 0.944 for performance scales to 0.974 for social practices (refer to Table 4-8). The PGFI is based upon the GFI by adjusting for loss of degrees of freedom and was developed by Mulaik et al. (1989). The parsimony goodness-of-fit index (PGFI) addresses the issue of parsimony in structural equation modeling and takes into account the complexity (i.e., number of estimated parameters) of the hypothesized model in the assessment of overall model fit. Byrne, (2010) suggested that non-significant χ^2 statistics

accompanied by parsimonious-fit indices around 0.50 are indicators of good fit. From Table 4-8, it is established that all our models are consistent with this statistic with a low of 0.567 for performance measures and a high of 0.647 for SSE capability dimensions measures.

Table 4-10: Measurement model: Fit results

Theoretical Construct	Operationalized Construct	χ^2 (p-value)	CFI ^a	PGFI ^a	TLI ^a	RMSEA ^a	No. of Items
SSE Capability	Cultural Astuteness	213.9 (0.000)	0.957	0.647	0.949	0.070	4
	Bi-directional communication						4
	Operations Astuteness						5
	Social Cognizance						5
Social Practices	Firm Social Practices	111.7 (0.000)	0.974	0.618	0.968	0.076	8
	Supplier Opportunistic Behavior						5
Performance	Firm Social Performance	133.9 (0.000)	0.944	0.567	0.924	0.098	4
	Operations Performance						4

^a Comparative fit index (CFI) > 0.9, Parsimony Goodness-of-fit index (PGFI) > 0.5, Tucker-Lewis index (CFI) > 0.9, Root mean square error of approximation (RMSEA) < 0.08 indicate good model fit

The Tucker-Lewis coefficient was discussed by Bentler & Bonett (1980) in the context of analysis of moment structures, and is also known as the Bentler-Bonett non-normed fit index (NNFI). The typical range for TLI lies between zero and one and TLI values close to 1 indicate a very good fit. The TLI values for the measurement models of SSE dimensions, social practices and performance are all close to 1 exceeding 0.9 and ranging from 0.924 for performance scales to 0.968 for social practices (refer to Table 4-8). The last goodness-of-fit index I used is root mean square error of approximation (RMSEA) and is considered one of the most informative criteria in covariance structure modeling. The RMSEA takes into account the error of approximation in the population and is expressed per degree of freedom, thus making it sensitive to the number of estimated parameters in the model (i.e., the complexity of the model). A

RMSEA value of less than .05 indicates good fit, while values as high as .08 represent reasonable errors of approximation. RMSEA values ranging from .08 to .10 indicate mediocre fit, and those greater than .10 indicate poor fit (Long & Bollen, 1993). The RMSEA values for the three measurement models range from 0.07 to 0.098 indicating reasonable fit.

After assessing the fit indices for the measurement model, I used the item-wise results of the confirmatory factor analysis to evaluate construct validity for all measures in the model.

Generally, the three most critical components of assessing construct validity are: construct reliability, convergent validity and discriminant validity (Peter, 1981). Each one of them is assessed in the next sections.

4.4.4 Construct reliability

Reliability is defined as the degree to which measures are free from error and therefore yield consistent results (Peter, 1979). I assessed the reliability of each multi-item scale using the CFA standardized factor loadings and calculating the composite reliability. Table 4-9 has the details on the construct reliability while the item loadings are provided in Table 4-10. In order to have sufficient construct reliability, a composite reliability score of 0.70 or higher is suggested. All the constructs in the study exhibited high reliability with a minimum score of 0.889 for ‘bi-directional communication’ and a high composite reliability of 0.969 for ‘firm social practices’, indicating that the measures are sufficient in their representation of respective constructs. Table 4-9 has the details for the composite reliability figures for all constructs.

Table 4-11: Assessing construct validity

Theoretical Construct	Operationalized Construct	No. of Items	Composite Reliability ^a	Average Variance Extracted ^b
SSE Capability	Cultural Astuteness	4	0.916	0.733
	Bi-directional communication	4	0.889	0.666
	Operations Astuteness	5	0.892	0.625
	Social Cognizance	5	0.931	0.729
Social Practices	Firm Social Practices	8	0.969	0.798
	Supplier Opportunistic Behavior	5	0.936	0.747
Performance	Firm Social Performance	4	0.921	0.745
	Operations Performance	7	0.898	0.561

^a Composite reliability values equal or exceeding .70 indicate strong scale reliability.

^b Average variance extracted values equal or exceeding .50 indicate that the measures are reflective of the construct

4.4.5 Convergent validity

Average variance extracted (AVE) represent the amount of variance that is captured by the construct in relation to the amount of variance due to measurement error (Fornell & Larcker, 1981a) and it is considered a good indicator of convergent validity (Devellis, 2011). Table 4-9 provides the AVE values for the constructs in the study. All constructs had AVE values exceeding 0.50, indicating that a large amount of variance is captured by each construct rather than being explained by measurement error. Convergent validity for could also be assessed by the magnitude and sign of the factor loadings of the measurement items (see Table 4-10). Inspection of the standardized loadings indicate that each was in its anticipated direction (i.e., positive correspondences between constructs and their posited indicators), and was statistically significant at $p < 0.05$.

Table 4-12: CFA results - Item loadings

Label	Item Description	Std. path loading	Std. Error	Critical Ratio	Mean ^a
Cultural Astuteness					
Please indicate the extent to which the following is true for your firm.					
CA5	Our firm is aware that the norms for business communication could be different in our supplier's culture	0.806	-	-	5.54
CA4	Our firm generally is willing to adapt to cultural differences between us and our supplier	0.854	0.104	11.563	5.2
CA3	Our firm believes that cultures affect the way firms conduct their business	0.854	0.102	11.568	5.46
CA2	Our firm values the importance of understanding our supplier's organizational culture for fostering a healthy relationship	0.907	0.104	12.617	5.35
Bi-directional communication					
Please indicate the extent to which your company does the following communication activities.					
CC5	Our firm and our supplier influence each other's decisions through discussion rather than formal requests	0.81	-	-	4.95
CC4	Our firm and our supplier have several different channels to communicate	0.777	0.086	10.022	5.3
CC3	Our firm and our supplier believe in having informal communication	0.832	0.086	11.006	5.25
CC2	Our firm and our supplier have open and two-way communication	0.844	0.084	11.221	5.58
Operations Astuteness					
Please indicate the extent to which the following is true for your firm					
OA5	Our firm uses site visits as a means of evaluating the state of our supplier's manufacturing operations	0.696	-	-	5.27
OA4	Our firm commits our supplier to regular sharing of operations information such as inventory levels, daily production, and weekly production plan	0.8	0.122	8.613	5.31
OA3	Our firm always has an employee who understands supplier operations well	0.828	0.12	8.889	5.46
OA2	Our firm's discussions with the supplier on production bottlenecks results in useful information sharing	0.807	0.112	8.679	5.26
OA1	Our firm is actively engaged in understanding and managing supplier capacity	0.814	0.116	8.743	5.29

Social Cognizance					
Please indicate the extent to which the following is true for your firm					
SCG5	Our firm's supplier 'code of conduct' is based on an industry-wide code of conduct standard	0.864	-	-	5.46
SCG4	Our firm regularly updates its supplier 'Code of Conduct' on the basis of revisions to international standards such as the ILO's eight core conventions and / or SA8000	0.927	0.076	15.465	5.34
SCG2	Our firm consults industry peers to advance our knowledge of potential social issues in supply chains	0.804	0.092	11.835	5.01
SCG1	Our firm's supply chain personnel are aware of various international social accountability standards such as SA8000 or the ILO's eight core conventions on labor and human rights	0.785	0.085	11.353	5.39
SCG6	Our firm's supplier 'code of conduct' has operational-level details on social issues such as allowable working hours, labor practices and discrimination	0.882	0.079	14.014	5.28

Firm Social Practices					
Please indicate the extent to which the following practices are adopted by your firm.					
FSP4	Our firm asks our supplier to provide evidence of complying with local / national laws on use of under-age workers	0.857	-	-	4.9
FSP6	Our firm asks our supplier to maintain documentary evidence for proof of age upon recruitment of new employees (such as copies of birth certificates or any other government issued identification documents)	0.924	0.077	15.515	4.75
FSP7	Our firm asks our supplier to ensure that its employees are not asked to deposit money, to be returned to them upon completion of a fixed employment period	0.845	0.088	12.995	4.53
FSP3	Our firm asks our supplier to ensure that its employees understand their wage structure as indicated on their wage slips and / or payroll records	0.876	0.079	13.895	4.64
FSP2	Our firm asks our supplier to ensure its compensation system is aligned with the minimum wage set by its country's labor laws	0.885	0.076	14.178	4.91
FSP9	Our firm asks our supplier to provide evidence that management at all levels can explain their responsibilities with regard to the company's OSH program	0.923	0.07	15.487	4.94
FSP10	Our firm asks our supplier to provide evidence that all OSH related documentation and records are complete	0.901	0.069	14.718	5.11

FSP11	Our firm asks our supplier to provide evidence that a mechanism exists to encourage input from workers on OSH issues	0.931	0.064	15.755	4.99
Supplier Opportunism					
In a buyer-supplier relationship, sometimes suppliers can exhibit opportunistic behavior when a problem occurs. When a problem occurs, how often will the supplier do the following?					
SO2	Our supplier “window dresses” its efforts to improve	0.922	-	-	3.7
SO3	Our supplier expects us to pay for more than our fair share of the costs to correct the problem	0.796	0.067	12.738	3.68
SO4	Our supplier is unwilling to accept responsibility	0.832	0.061	14.009	3.47
SO6	Our supplier fails to provide proper notification of a problem	0.84	0.07	14.296	3.57
SO1	Our supplier makes hollow promises	0.923	0.049	18.17	3.43
Firm Social Performance					
For each of the items listed below, how would rate your firm’s performance in the last two years.					
FSPf1	Ensuring adherence to supplier code of conduct by tier-1 suppliers	0.842	-	-	5.22
FSPf2	Screening suppliers for potential social concerns during contract negotiations	0.908	0.084	13.742	5.1
FSPf3	Conducting site audits of tier-1 suppliers for code of conduct conformance	0.839	0.082	12.038	5.2
FSPf4	Expanding the list of social performance metrics for suppliers	0.862	0.085	12.588	4.99
Supplier Social Performance					
For each of the items listed below, how would rate your supplier’s performance in the last two years.					
SSP5	Supplier’s collaborative efforts with our firm to develop a socially responsible supply chain	0.908	-	-	4.99
SSP2	Supplier’s improvement in bringing transparency to its payroll system	0.871	0.068	14.807	4.7
SSP3	Supplier’s improvement towards meeting minimum-age requirements for hiring workers	0.863	0.069	14.525	4.78
SSP4	Supplier’s improvement in complying with our firm’s supplier code of conduct	0.806	0.063	12.59	5.09
Operations Performance					
For each of the items listed below, how does the performance of your firm compare with its primary competitors?					
Qual1	Performance quality (i.e., a product’s primary operating characteristics)	0.828	-	-	5.69

Qual2	Conformance quality (i.e., the degree to which a product's operating characteristics meet established standards)	0.867	0.097	11.173	5.71
Qual3	Product reliability (i.e., the probability of a product failing within a specified time period)	0.773	0.092	9.795	5.77
Flex1	Being able to provide fast-response deliveries from order to end customer	0.794	-	-	5.43
Flex2	Order fulfillment lead time	0.87	0.086	11.338	5.41
Flex3	Delivery lead time	0.908	0.089	11.914	5.44
Flex4	Ability to rapidly change production volumes	0.687	0.115	8.39	5.23

^a Likert-scale responses from 1 to 7.

4.4.6 Discriminant validity

Discriminant validity refers to the independence of the dimensions (i.e., the extent to which measures of different constructs in the study are distinctly different from each other) (Devellis, 2011). As a rule-of-thumb, correlations between scales designed to measure distinct constructs should not exceed 0.70. There are several methods for establishing discriminant validity and one of the more widely used technique is the one suggested by Fornell & Larcker (1981). It was suggested that the square root of the AVE of a construct should exceed all the correlations with other constructs (Hair et al., 2009). Discriminant validity is further demonstrated when average variance explained (AVE) exceeds both Average Shared Square Variance (ASV) and Maximum Shared Square Variance (MSV) (Fornell & Larcker, 1981b). Using these two criteria, I assessed the discriminant validity of each construct in the study. While the first criteria of square-root of AVE being higher than the correlations is met for all constructs, the AVE is found to be less than MSV for *Bi-directional communication* and *Operations Astuteness* constructs. However, the difference between AVE and MSV values for the two constructs is negligible. In addition, from a theoretical perspective, the four dimensions of SSE are hypothesized to be complementary, thus

higher correlations among the four dimensions is expected. The details of the discriminant validity assessment are provided in Table 4-11.

Table 4-13: Discriminant validity assessment

	Operationalized Construct	AVE^a	MSV^b	ASV	1^c	2	3	4	5	6	7	9
1	Cultural astuteness	0.732	0.694	0.413	0.856							
2	Bi-directional communication	0.667	0.743	0.409	0.833	0.816						
3	Operations astuteness	0.625	0.743	0.393	0.815	0.862	0.791					
4	Social cognizance	0.729	0.564	0.369	0.649	0.724	0.751	0.854				
5	Firm social practices	0.798	0.444	0.270	0.588	0.570	0.504	0.666	0.893			
6	Supplier opportunistic behavior	0.747	0.029	0.008	-0.077	-0.099	-0.068	-0.072	0.056	0.864		
7	Firm social performance	0.745	0.389	0.274	0.553	0.512	0.463	0.603	0.618	0.017	0.863	
8	Operations Performance	0.561	0.452	0.267	0.672	0.551	0.551	0.508	0.371	-0.169	0.624	0.749

a. Average Variance Extracted (AVE), Maximum Shared Variance (MSV), and Average Shared Variance (ASV)

b. The AVE has to be higher than both MSV and ASV for a construct to have discriminant validity

c. The diagonal has the square-root of AVE that has to be higher than correlations with any other construct

Chapter 5. Results

The chapter outlines the main results of the study and is divided in three parts. Initially, the validity of the SSE capability as a higher-order construct is established. The complementarity among the four underlying dimensions of the SSE capability is also discussed. The second part of the chapter is devoted to the discussion of the results from Hypothesis 2 to Hypothesis 5. The chapter concludes with a section on robustness of the results confirmed through various post-hoc tests. The hypothesized structural model is provided in Figure 5-1.

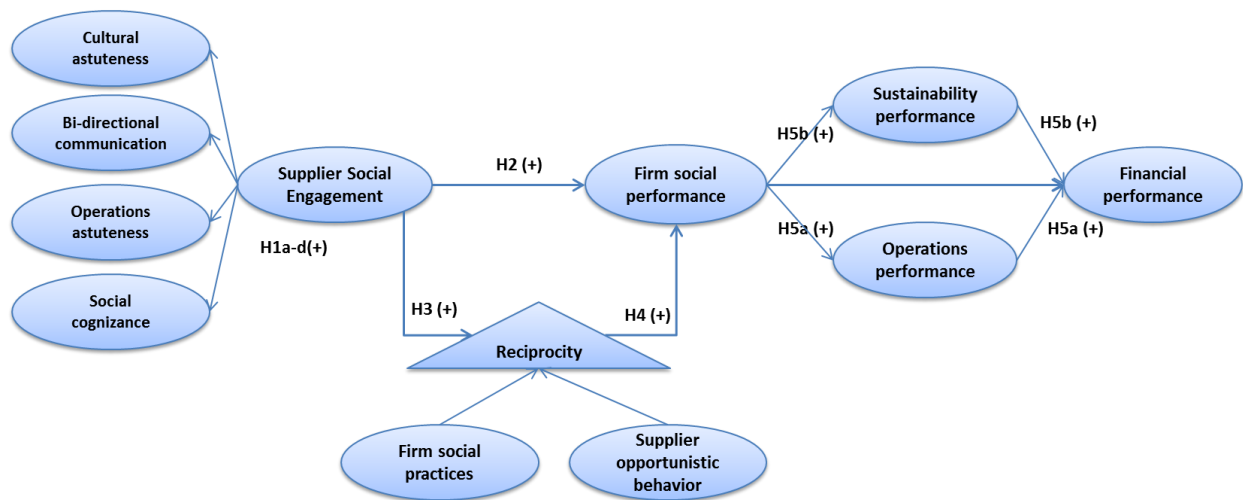


Figure 5-1: Structural model

5.1 SSE as a higher-order construct:

The first hypothesis relates to establishing SSE as a second-order construct consisting of four underlying dimensions of *Cultural Astuteness*, *Bi-directional communication*, *Operations Astuteness* and *Social Cognizance*. More formally, Hypothesis 1 stated that SSE capability is multidimensional and is reflected by and positively related to cultural astuteness, operations astuteness, bi-directional communication, and social cognizance.

Kline (2011) cautions that in order to identify a hierarchical second-order CFA model, there must be at least three first-order factors. Otherwise, the direct effects of the second-order factor on the first-order factors or the disturbance variances may be under-identified. It is also recommended that each first-order factor should have at a minimum two indicators. Both these requirements are met in this study as SSE capability has four first-order constructs and each first-order construct has a minimum of four items. The higher-order model is shown in Figure 5-2.

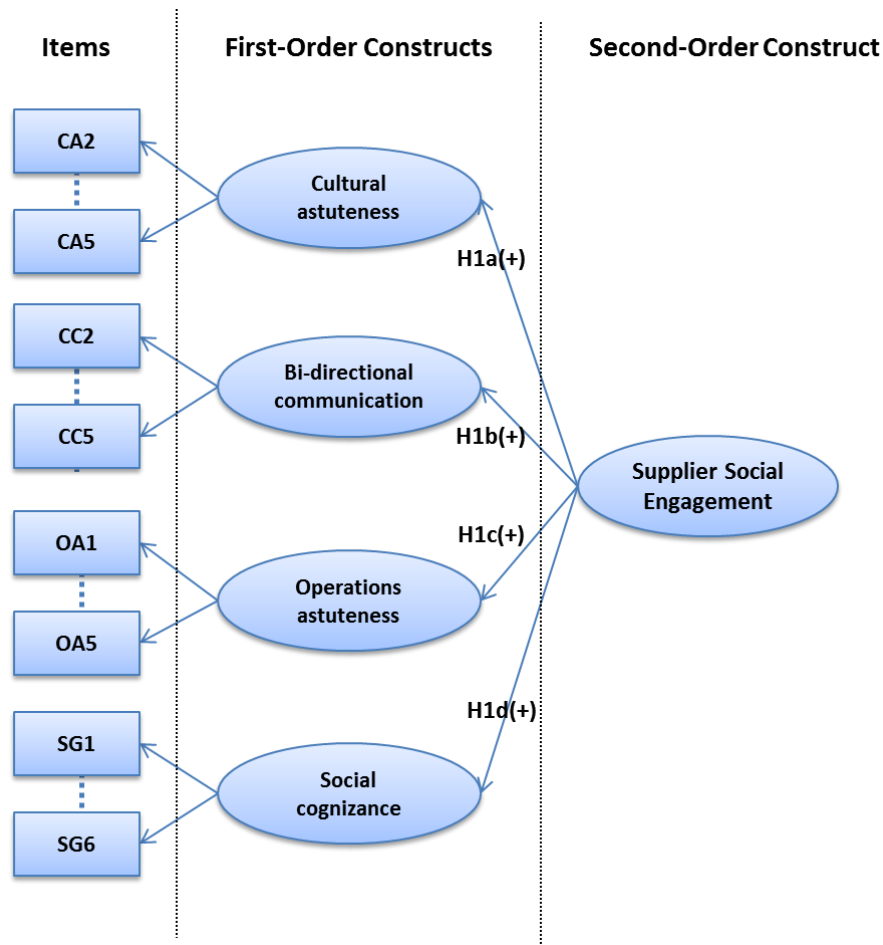


Figure 5-2: SSE as a second-order construct

After setting up the higher-order structural model in AMOS, I constrained one of the first-order factor loading to one to scale the SSE capability construct. There are two ways to scale the second-

order factor: one is to constrain one of the unstandardized direct effects on a first-order factor to 1.0 and the second is to fix the variance of the second-order factor to 1.0, i.e. standardize it (Kline, 2011). In order to remain consistent with the analysis in the measurement model assessment, I adopted the first approach. The results remain the same regardless of the approach to add a single constraint to the model.

The structural model results for the higher-order construct indicate good model fit ($\chi^2 = 216.05$, $df = 131$, $p = 0.001$; $\chi^2/df = 1.649$; CFI = 0.957; TLI = 0.950; RMSEA = 0.070). Table 1 contains the results for the regression paths. All four dimensions are found to be positively related to the SSE capability as hypothesized in H1.

Table 5-1: Hypothesis 1 results

Hypotheses	Relationships			Standardized β	S.E.	C.R.	p-value
H1a	SSE	--->	Cultural Astuteness	0.875	0.09	8.559	***
H1b	SSE	--->	Bi-directional communication	0.933	-	-	-
H1c	SSE	--->	Operations Astuteness	0.934	0.114	7.684	***
H1d	SSE	--->	Social Cognizance	0.778	0.1	8.238	***

In order to establish SSE capability as a second-order construct, comprising of four first-order constructs, I used the approach suggested by Malhotra & Mackelprang (2012) and Marsh & Hocevar (1985). The procedure considers the extent to which a second-order factor structure accounts for all of the relations among the first-order constructs. This was accomplished through creating a ratio of the chi-square of the correlated first-order factor model (first-order measurement model) to the chi-square of the second-order factor model. The chi-square (χ^2) for

the correlated first-order model was 213.9 with 129 degrees of freedom. The chi-square (χ^2) for the second-order structural model was 216.05 with 131 degrees of freedom. Thus, the chi-square (χ^2) ratio was 0.990. Marsh and Hocevar (1985) suggest that as this ratio approaches 1.0, there is greater support for a second-order model. To further evaluate the presence of a second order factor, Venkatraman (1990) suggests that when the second-order factor loadings are all significant, support for a second-order factor model exists. This condition is also met as per the relationships exhibited in Table 5-1.

5.1.1 Complementarity of SSE dimensions

Apart from establishing the multidimensional nature of the SSE capability construct, I also explored whether complementarity was present among the four underlying dimensions of SSE capability. Complementarity exists when the presence of one activity enhances the effect of another activity on a parameter of interest (Cassiman & Veugelers, 2006). In Chapter 2, I argued that complementarity exists among the four dimensions of SSE capability. In order to empirically validate complementarity, two conditions have to be met. The first condition is that the correlations among the complementary dimensions should be significant and in the hypothesized direction. The results indicate that correlations among all four dimensions of SSE capability were in the hypothesized direction (positive) and significant, as shown in Table 4-10. However, a pattern of positive correlations is a necessary, but not a sufficient, condition for establishing complementarity.

The second condition to be met for complementarity is that the combined effect of a set of complementary input measures on an outcome measure is greater than the individual effect of each input measure. To satisfy this condition, I created two different structural models as shown in Figure 5-3. The SSE capability construct was related to a performance outcome in Figure 5-3-

A while in Figure 5-3-B, the four dimensions of SSE capability were individually related to the performance outcome. For performance outcome, I used the measure of ‘Quality performance’ adopted from the set of operations performance measures (Kristal et al., 2010; Menor & Roth, 2007; Rosenzweig et al., 2003). The intention was to differentiate between the factor loadings of the two competing models on *Quality performance*. This approach of relating a performance-based outcome measure to a set of complementary measures has been widely used in previous management research (e.g. Lichtenthaler, 2009; Malhotra & Mackelprang, 2012)

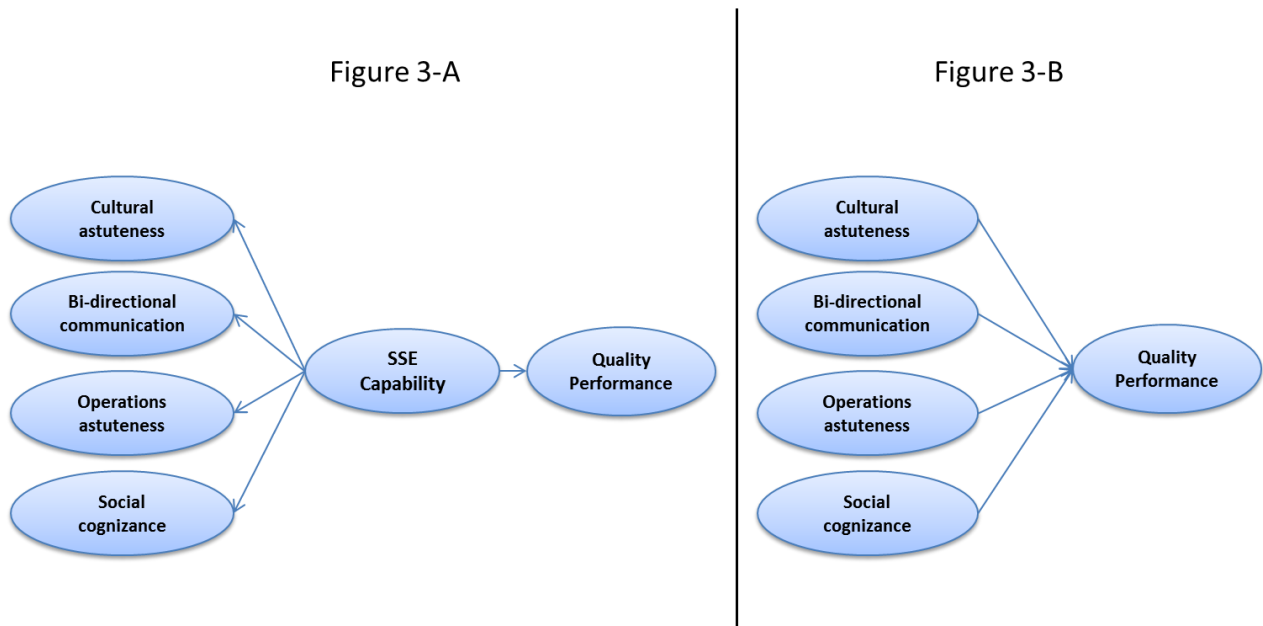


Figure 5-3: Complementarity assessment models

The comparison of results between the two models supports the notion of complementarity among the four underlying dimensions of SSE capability (refer to Table 5-2). First, the chi-square difference between the two models is not significant at $p < 0.05$ level (Chi-square of 305.69 versus 295.28), indicating that the two models are not very different in terms of model-fit. Second, and more importantly, the strength and significance of relationships in the

complementary model (Model 5-3-A) is better than the model with individual dimensions (Model 5-3-B). The results of Model 5-3-A indicate that all four dimensions are positively related to SSE capability and that the SSE capability has a positive and significant impact on quality performance ($\beta = 0.631$, $p < 0.05$). On the other hand, only one of the four relationships in Model 5-3-B is significant at $p < 0.05$ level. The results of the two models are presented in Table 5-2. In summary, I have empirically established that *Cultural Astuteness*, *Bi-directional communication*, *Operations Astuteness* and *Social Cognizance* are complementary dimensions for the SSE capability.

Table 5-2: Complementarity analysis results

Model 5-3-A Results

Chi-square = 305.690; Degrees of freedom = 184

Relationships		β	S.E.	C.R.	p-value
SSE	---> Cultural Astuteness	0.888	0.091	8.637	***
SSE	---> Bi-directional communication	0.925	-	-	-
SSE	---> Operations Astuteness	0.928	0.115	7.621	***
SSE	---> Social Cognizance	0.78	0.102	8.214	***
SSE	---> Quality Performance	0.631	0.083	6.341	***

Model 5-3-B Results

Chi-square = 295.282; Degrees of freedom = 179

Relationships		β	S.E.	C.R.	p-value
Cultural Astuteness	---> Quality Performance	0.606	0.171	3.274	0.001
Bi-directional communication	---> Quality Performance	-0.157	0.173	-0.69	0.49
Operations Astuteness	---> Quality Performance	0.029	0.195	0.128	0.898
Social Cognizance	---> Quality Performance	0.221	0.102	1.683	0.092

5.2 Structural model analysis

In order to analyze Hypothesis 2 to Hypothesis 5, I converted the structural model into a path model. Path analysis is a special case of structural equation modelling (SEM) where the analysis contains only observed variables, and has a more restrictive set of assumptions than SEM. Path analysis is used when there are multiple predictions of multiple variables in a model. Since, the focus of analysis was on the relationships, I replaced each construct with its composite score using average of its scale items. The measurement properties of the scales have already been established in Chapter 4; hence the focus on the relationships among the constructs. This use of path analysis is also appropriate, given the number of constructs, hypothesized relationships, and final sample size. This estimation method has been employed in earlier operations management studies (e.g. Paiva, Roth, & Fensterseifer, 2008) where reliability of constructs is high, as is the case in this study. The structural model converted to Path model is provided in Figure 5-4. Table 5-3 contains the descriptive statistics for the operationalized constructs of the path model while Table 5-4 has the correlations among composite scores of all constructs in this study. Table 5-5 has the results of the hypothesized model.

The descriptive statistics in Table 5-3 and Table 5-4 provide an overview of the measures in the model. One of the assumptions of the maximum likelihood estimator is multivariate normality of the data. With multivariate statistics, the assumption is that the combination of variables follow a multivariate normal distribution. Since there is not a direct test for multivariate normality, generally, each variable is individually tested for normality and it is assumed that the overall model based on the normally distributed variables is multivariate normal. The two indicators used for assessing normality are skewness and kurtosis. Curran, West, & Finch (1996) recommend values of skewness between ± 2 and kurtosis between ± 7 to be indicative of

univariate normality. Table 5-3 provides these statistics and all variable fall within the prescribed limits.

Table 5-3: Descriptive statistics

	Operationalized Construct	Mean	Std. Deviation	Range	Skewness		Kurtosis	
		Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
1	Cultural Astuteness	5.388	1.24	6.00	-1.002	.209	.947	.416
2	Bi-directional communication	5.271	1.24	6.00	-.990	.209	.781	.416
3	Operations Astuteness	5.316	1.18	6.00	-.973	.209	.915	.416
4	Social Cognizance	5.296	1.35	6.00	-.885	.209	.485	.416
5	Firm Social Practices	4.846	1.71	6.00	-.647	.209	-.497	.416
6	Supplier Opportunistic behavior	3.570	1.56	6.00	.030	.209	-.671	.416
7	Reciprocity	0.155	2.59	18.46	.138	.209	1.802	.416
8	Firm Social Performance	5.129	1.16	5.25	-.384	.209	-.410	.416
9	Operations Performance	5.525	0.95	5.00	-.690	.209	.259	.416
10	Sustainability Performance (2013)	3.147	3.50	21.00	1.022	.209	1.387	.416
11	Financial Performance (2013)	0.082	0.085	0.552	-.309	.209	1.661	.416

Figure 5-4: Path model (with hypotheses)

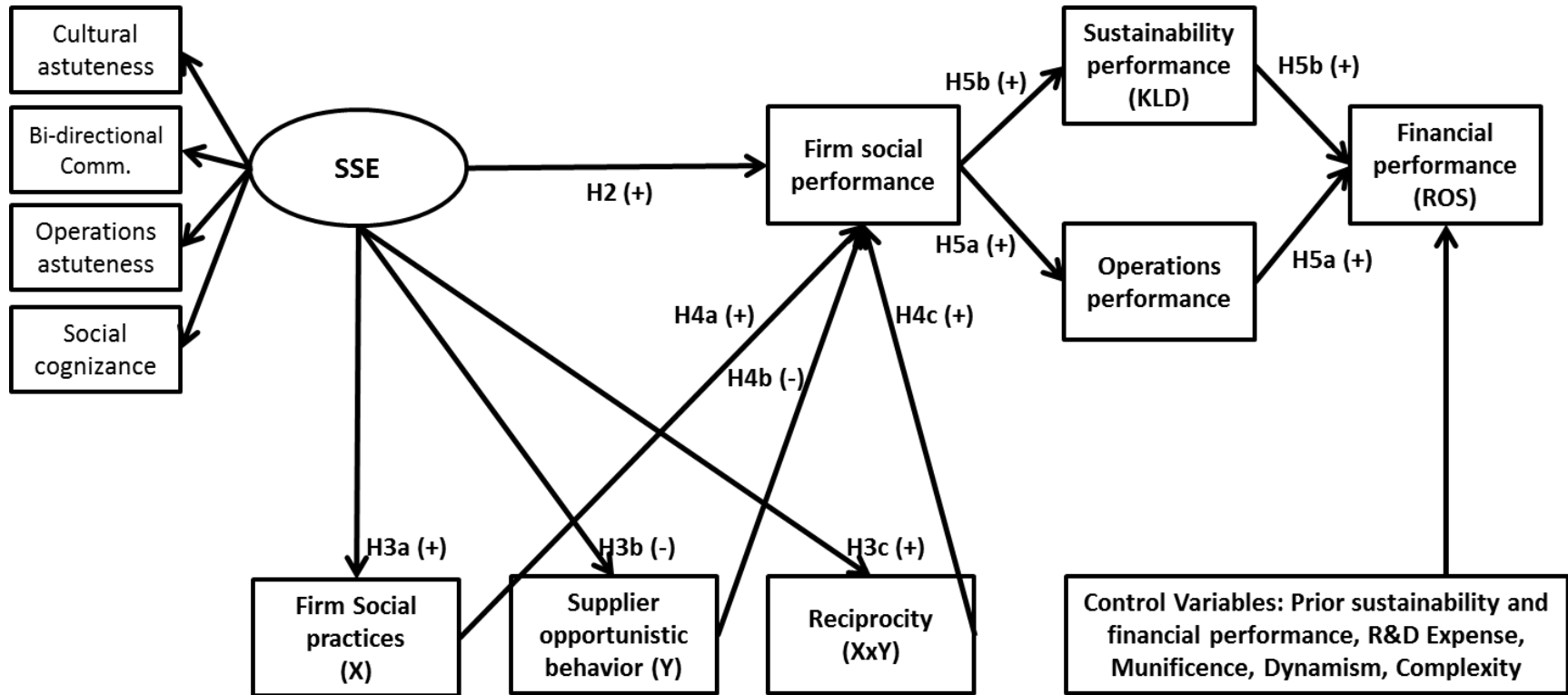


Table 5-4: Correlation table

Operationalized Construct	1	2	3	4	5	6	7	8	9	10	11
1 Cultural Astuteness											
2 Bi-directional Communication	.753**										
3 Operations Astuteness	.739**	.776**									
4 Social Cognizance	.609**	.662**	.697**								
5 Firm Social Practices	.551**	.531**	.471**	.629**							
6 Supplier Opportunistic behavior	-.076	-.090	0	-0.064	.058						
7 Reciprocity	-.078	.075	-0.058	0	-.054	.343**					
8 Firm Social Performance	.435**	.403**	.381**	.534**	.615**	0.1204	.035				
9 Operations Performance	.636**	.512**	.521**	.491**	.344**	0	-.030	.463**			
10 Sustainability Performance (2013)	-.005	-.118	-.133	-.046	-.075	.005	0	-0.118	0.092		
11 Financial Performance (2013)	.078	-.053	.000	.034	.038	-0.047	-0.088	0	.180*	.396**	

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Table 5-5: Path analysis results

	Relationships		β	S.E.	C.R.	p-value
H1	SSE	---> Cultural Astuteness	0.959	0.076	12.686	***
	SSE	---> Bi-directional Communication	1.000	-	-	-
	SSE	---> Operations Astuteness	0.939	0.070	13.500	***
	SSE	---> Social Cognizance	0.963	0.087	11.128	***
H2	SSE	---> Firm Social Performance	0.342	0.098	3.486	***
H3	SSE	---> Firm Social Practices	0.980	0.122	8.014	***
	SSE	---> Supplier Opportunistic Behavior	-0.100	0.129	-0.775	0.438
	SSE	---> Reciprocity	-0.030	0.216	-0.139	0.890
H4	Firm Social Practices	---> Firm Social Performance	0.273	0.059	4.615	***
	Supplier Opportunistic Behavior	---> Firm Social Performance	-0.042	0.052	-0.806	0.420
	Reciprocity	---> Firm Social Performance	0.068	0.032	2.140	0.032
H5	Firm Social Performance	---> Operations Performance	0.479	0.058	8.297	***
	Operations Performance	---> Financial Performance (ROS 2013)	0.019	0.006	3.232	0.001
	Firm Social Performance	---> Sustainability Performance (2013)	0.014	0.191	0.075	0.940
	Sustainability Performance (2013)	---> Financial Performance (ROS 2013)	0.004	0.002	2.235	0.025
Controls	Firm Level Controls					
	<i>Sustainability Performance (2011)</i>	---> <i>Sustainability Performance (2013)</i>	<i>0.453</i>	<i>0.042</i>	<i>10.763</i>	<i>***</i>
	<i>Financial Performance (ROS 2011)</i>	---> <i>Financial Performance (ROS 2013)</i>	<i>0.493</i>	<i>0.091</i>	<i>5.439</i>	<i>***</i>

	R&D Expenses (2013)	--->	Financial Performance (ROS 2013)	0.002	0.001	1.235	0.217
	Industry Controls						
	Munificence	--->	Financial Performance (ROS 2013)	0.087	0.188	0.462	0.644
	Dynamism	--->	Financial Performance (ROS 2013)	-0.336	0.103	-3.275	0.001
	Complexity	--->	Financial Performance (ROS 2013)	0.064	0.062	1.031	0.302

The path model results indicate good model fit ($\chi^2 = 162.60$, $df = 83$, $p < 0.001$; $\chi^2/df = 1.959$; CFI = 0.918; GFI = 0.879; TLI = 0.882; RMSEA = 0.085) (Kline 2011). The results also provide support for the hypothesized relationships in the proposed model as shown in Table 5-5 and explained in the next few paragraphs.

5.2.1 SSE capability & social performance

Hypothesis 2 related SSE capability to social performance of firms. The results of H2 indicate (refer to Table 5-5) SSE capability to be significantly and positively related to firm social performance, signifying that firms that engaged with suppliers had better social performance ($\beta = 0.354$, $p < 0.001$).

5.2.2 SSE capability, reciprocity and social performance

Hypothesis 3 related SSE capability to reciprocity of social practices between a firm and its suppliers while Hypothesis 4 argued that reciprocity of social practices leads to improved social performance.

As explained earlier in Section 3.2.1, the most appropriate method of assessing reciprocity for the proposed model of this study was found to be '*fit as moderation*' approach (Venkatraman, 1989). This approach has also been used in earlier operations management research to assess fit

among practices (e.g. Kroes & Ghosh, 2010). The approach implies that the impact of a predictor variable on a dependent variable is influenced by an interaction between the predictor and an additional variable, designated as the moderator. In this study, the supplier-centric social practices of the buyer firm is one of the predictor variables of firm social performance. The other predictor variable is supplier opportunistic behavior. The reciprocity of social practices is the interaction of the two terms. Denoting supplier-centric ‘firm social practices’ as ‘X’ and ‘supplier opportunistic behavior’ as ‘Y’, reciprocity is the interaction term denoted as ‘X × Y’. Hypothesis 3 and Hypothesis 4 in a path model form are shown in Figure 5-5 along with the reciprocity (interaction) term.

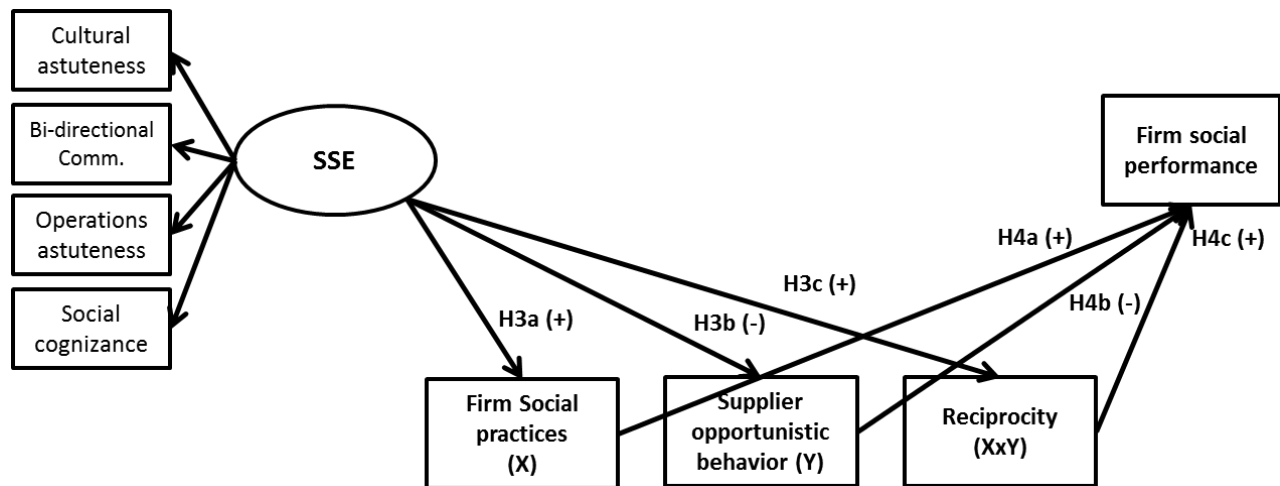


Figure 5-5: Path model for Hypotheses 3 & 4

Since both supplier-centric firm social practices and supplier opportunistic behavior are summed scales of their respective items, they are treated as continuous variables in the model. I calculated the interaction term by first centering the two continuous variables to avoid possible problems with multicollinearity (McClelland & Judd, 1993). The two centered variables were then

multiplied together to generate the reciprocity variable. The descriptive statistics for the reciprocity variable are provided in Table 5-3.

As noted earlier, Hypothesis 3 linked SSE capability to reciprocity. In order to test H3, three paths were added to the path diagram, each originating from SSE capability and terminating at supplier-centric 'firm social practices', 'supplier opportunistic behavior' and 'reciprocity' variables. These three paths are accordingly labeled as H3a, H3b and H3c respectively (refer to Figure 5-5). Hair et al. (2009) suggests that models with interaction effects should include the main effects of the variables that were used to compute the interaction terms, even if these main effects are not significant. Otherwise, main effects and interaction effects can get confounded.

The results indicated that SSE capability is positively related to supplier-centric 'firm social practices' (H3a: $\beta = 0.98$, $p < 0.01$) indicating that as firms strive to engage with suppliers, it results in an improvement of its own supplier-centric social practices. On similar lines, the SSE capability was found to be negatively related to supplier opportunistic behavior (H3b: $\beta = -0.10$, $p = 0.438$), indicating that as firms engage more with suppliers, supplier opportunistic behavior reduces. However, the significance of the relationship between SSE capability and supplier opportunistic behavior could not be established. The SSE capability to reciprocity path was also found to be non-significant (H3c: $\beta = -0.03$, $p = 0.890$). Both the small magnitude of beta (β) and a non-significant p-value indicate a lack of relationship between the two variables. Hence, there was no evidence that SSE capability influenced reciprocity of social practices.

The fourth hypothesis focused on the impact of reciprocity on firm social performance. As was the case in Hypothesis 3, three paths were added, originating from 'firm social practices', 'supplier opportunistic behavior' and 'reciprocity' variables and terminating at firm social

performance. These three paths are accordingly labeled as H4a, H4b and H4c respectively (refer to Figure 5-5).

The results indicated that the hypothesized relationship between supplier-centric firm social practices and firm social performance is positive and significant (H4a: $\beta = 0.273$, $p < 0.001$). However, no evidence was found that supplier opportunistic behavior has a significant impact on firm social performance (H4b: $\beta = -0.042$, $p = 0.420$). The analysis further revealed that reciprocity has a positive and significant impact on firm social performance. The path loading, although small in magnitude, was found to be positive with a significant p-value (H4c: $\beta = 0.068$, $p < 0.05$).

5.2.2.1 Interpreting reciprocity results (H4c)

A significant continuous by continuous interaction means that the slope of one continuous variable on the response variable changes as the values on a second continuous change (Institute for Digital Research and Education (IDRE), 2010). There are several methods that are used in the literature to explain an interaction of two continuous variables. The most common approach is to compute simple slopes, i.e., the slopes of the dependent variable on the independent variable when the moderator variable is held constant at different combinations of high and low values (Institute for Digital Research and Education (IDRE), 2010). The combination of high and low values of the moderator variable is generally one standard deviation above the mean and one standard deviation below the mean.

Following these guidelines, I analyzed the change of slope for the relationship between ‘firm social performance’ and ‘supplier opportunistic behavior’ by using different values of the construct ‘firm social practices’. The graph in Figure 5-6 displays the results of the analysis

where I used three different levels of ‘firm social practices’ i.e. the mean, one standard deviation above the mean and one standard deviation below the mean.

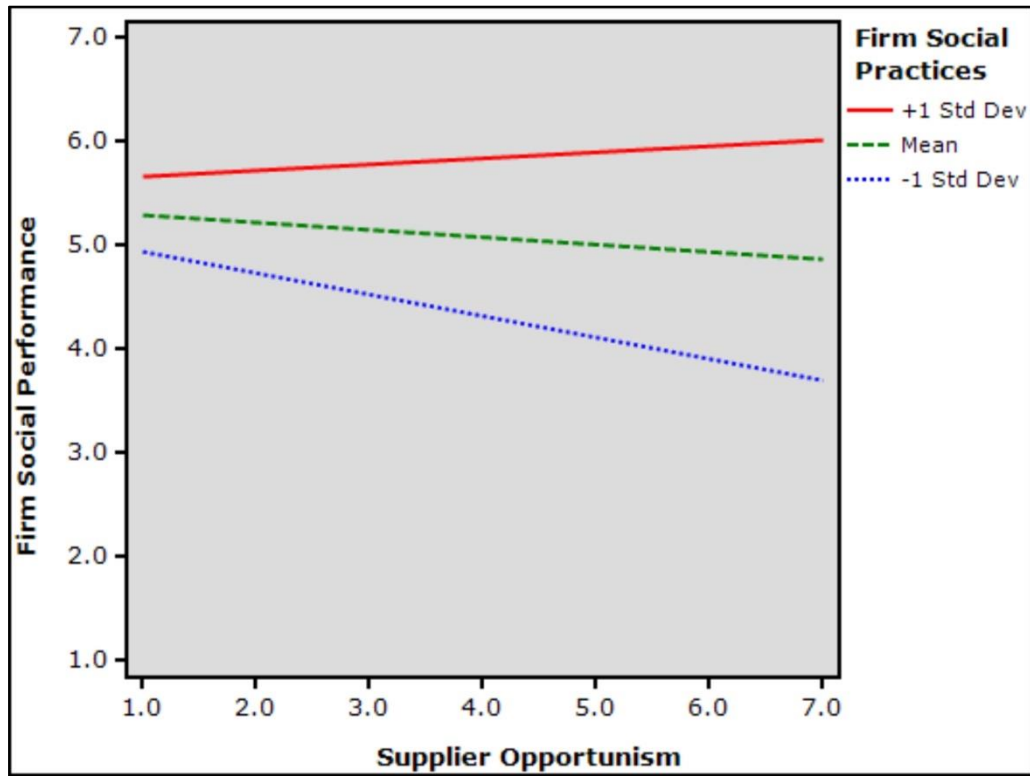


Figure 5-6: Hypothesis 4 - Reciprocity of social practices and social performance

It is interesting to note that for mean value of the ‘firm social practices’ construct, the slope of the relationship between ‘firm social performance’ and ‘supplier opportunistic behavior’ is negative. The slope is similarly negative for one standard deviation below the mean value of ‘firm social practices’ construct. However, the slope of the relationship between ‘firm social performance’ and ‘supplier opportunistic behavior’ is positive when the ‘firm social practices’ construct is one standard deviation above its mean value. These trend lines indicate that it is important for buyers firms to improve their social practices in order to counter the effect of supplier opportunistic behavior. In other words, firms that adopt higher than average supplier-

centric social practices exhibit greater social performance. Moreover, such firms are less effected by supplier opportunistic behavior, as higher levels of supplier opportunistic behavior have no significant impact on their social performance. On the contrary, this is not the case for firms that are either on average or below average in terms of adopting supplier-centric social practices. Such firms' social performance is negatively impacted by increasing levels of supplier opportunistic behavior (indicated by negative slope between opportunism and performance).

5.2.3 Social and financial performance

The last set of hypotheses related a firm's social performance to that of its operations, sustainability and financial performance. I hypothesized that social performance of a firm will positively influence its financial performance and that there will be a parallel mediation of operations performance and sustainability performance on the relationship between social performance and financial performance. The resulting path model of H5a and H5b is provided in Figure 5-7 displaying the parallel mediation effect. The measure of operations performance was adopted from earlier studies (Kristal et al., 2010). In order to capture a firm's aggregate sustainability performance, KLD metric from the KLD database was calculated (details in Section 4.4.1), while for financial performance, return-on-sales (ROS) was computed using data from the COMPUSTAT database.

To determine whether the firm social performance has an indirect effect on financial performance, I conducted a parallel mediation analysis(Zhao, Lynch, & Chen, 2010). The objective of the analysis was to examine whether the conditional indirect effect of the independent variable (firm social performance) on the dependent variable (financial performance) is mediated through operations performance and sustainability performance.

Hypothesis 5a related firm social performance to financial performance mediated by operations performance. I found a partial mediating effect of operations performance onto the relationship between firm social performance and financial performance. This is because the direct path between firm social performance and financial performance was not significant. However, the relationship was positive and significant between firm social performance and operations performance ($\beta = 0.479$, $p < 0.001$) (refer to Table 5-5). Similarly, the relationship between operations performance and financial performance was found to be positive and significant ($\beta = 0.019$, $p = 0.001$) (refer to Table 5-5).

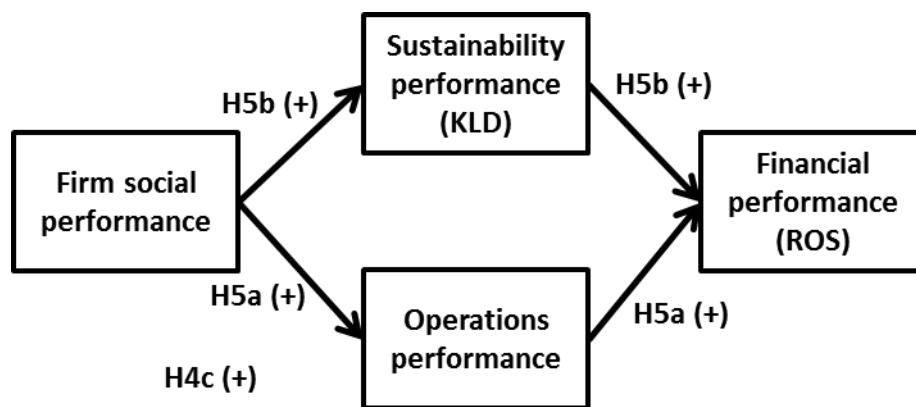


Figure 5-7: Path model for H5

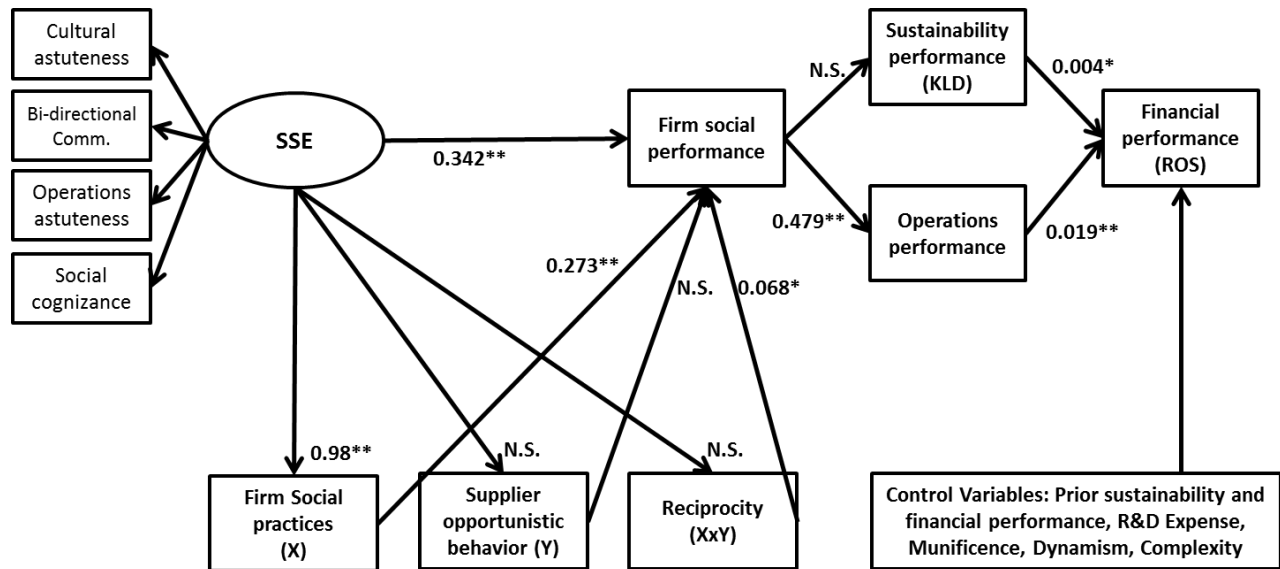
Contrary to expectations, the relationship between firm social performance and aggregate sustainability performance could not be established ($\beta = 0.014$, $p = 0.940$). Therefore, H5b hypothesizing the mediating effect of sustainability performance between firm social performance and financial performance was not supported.

5.3 Summary of results

The summary of the hypothesized relationships is presented in Table 5-6 below, while Figure 5-8 has the results displayed on the path model.

Table 5-6: Summary of results

<i>Hypothesis</i>	<i>Result</i>
H1a	Supported
H1b	Supported
H1c	Supported
H1d	Supported
H2	Supported
H3a	Supported
H3b	Not supported
H3c	Not supported
H4a	Supported
H4b	Not supported
H4c	Supported
H5a	Supported
H5b	Not supported



** = $p < 0.01$, * = $p < 0.05$

Figure 5-8: Results with path model

5.4 Cross-validation of results using holdout sample

As discussed earlier in Section 4.2, the total complete responses received were 237. The desire to use the secondary performance data for sustainability and financial performance reduced the effective sample size to 134. However, since the remaining 103 responses were received exercising the same sampling frame and were effectively randomly distributed within the 237 responses, I used these 103 responses to check for the robustness of the results. The robustness checks were carried out both for the measurement and the structural models. In structural equation modelling, this type of analysis falls under the category of multi-group analysis and is commonly known as invariance testing (Byrne, 2010; Kline, 2011). The central concern in invariance testing is whether or not components of the measurement model and the structural model are equivalent (i.e., invariant) across particular groups of interest.

5.4.1 Invariance testing procedure

Development of a procedure capable of testing for multi-group invariance derives from the seminal work of Jöreskog (1971). Byrne(2010) describes the process of invariance testing as follows: *“The tests for the equivalence of parameters are conducted across groups at each of several increasingly stringent levels. In particular, the pattern of factor loadings for each observed measure is tested for its equivalence across the groups. Once it is known which measures are group-invariant, these parameters are constrained equal while subsequent tests of the structural parameters are conducted. As each new set of parameters is tested, those known to be group-invariant are cumulatively constrained equal. Thus, the process of determining nonequivalence of measurement and structural parameters across groups involves the testing of a series of increasingly restrictive hypotheses.”* Byrne (2010) also suggests that tests should

begin with scrutiny of the measurement model. To this end, I proceeded with first testing the invariance of the measurement model across the two samples.

5.4.2 Measurement model invariance

In testing measurement model invariance across two groups, the pattern of factor loadings for each observed measure is tested for its equivalence across the groups. Since the baseline model is same for both the groups, a large chi-square χ^2 difference between the two models would support detailed investigation of invariance at each construct and item level.

While testing for measurement invariance, I found the chi-square χ^2 difference between the two groups to be 279.9 suggesting that non-invariance exists between the two groups. Given findings of non-invariance at the baseline model level, I then proceeded to test for the invariance of all factor loadings comprising each subscale (i.e., all loadings related to the one particular factor) separately. Given evidence of non-invariance at the subscale level, I then tested for the invariance of each factor loading (related to the factor in question) separately. The testing procedure is summarized in Figure 5-9.

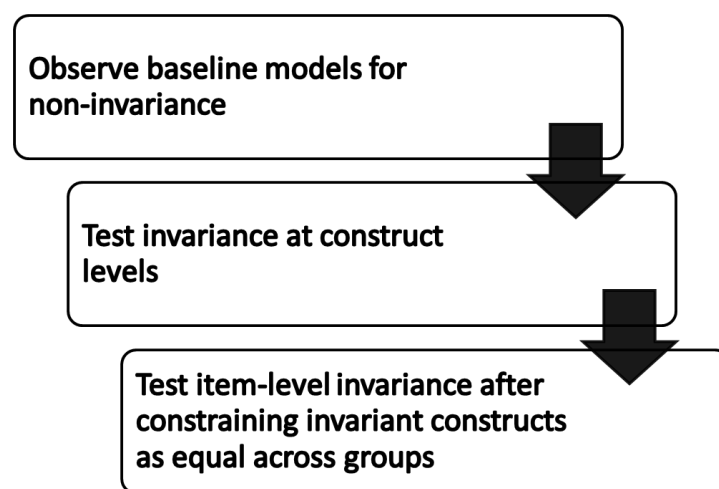


Figure 5-9: Invariance testing procedure

The results of the measurement model invariance testing are provided in Table 5-7. In reviewing the results of individual factor loadings, only items for the construct of ‘firm social performance’ were found to be non-invariant at $p < .05$ level. All other constructs were invariant across two groups of $N = 134$ and $N = 103$. From these findings, I learn that the construct of ‘firm social practices’ was operating somewhat differently in its measurement of the intended content for the two groups. However, overall results suggest that the two groups are indeed invariant with only one factor displaying significantly different results.

Table 5-7: Measurement invariance results

Construct	Item No.	Group 1 (N=134)		Group 2 (N=103)		z-score
		β	<i>p-value</i>	β	<i>p-value</i>	
Operations Astuteness	---> OA5	1.00		1.00		
Operations Astuteness	---> OA4	1.05	0.00	1.12	0.00	0.33
Operations Astuteness	---> OA3	1.07	0.00	0.81	0.00	-1.27
Operations Astuteness	---> OA2	0.97	0.00	1.03	0.00	0.33
Operations Astuteness	---> OA1	1.01	0.00	0.93	0.00	-0.40
Bi-directional communication	---> CC5	1.00		1.00		
Bi-directional communication	---> CC4	0.86	0.00	0.86	0.00	0.00
Bi-directional communication	---> CC3	0.95	0.00	0.91	0.00	-0.27
Bi-directional communication	---> CC2	0.94	0.00	0.65	0.00	-2.3**
Cultural Astuteness	---> CA5	1.00		1.00		
Cultural Astuteness	---> CA4	1.21	0.00	1.10	0.00	-0.58
Cultural Astuteness	---> CA3	1.18	0.00	0.99	0.00	-0.98
Cultural Astuteness	---> CA2	1.32	0.00	1.11	0.00	-1.04

Social Cognizance	---	SCG5	1.00		1.00		
Social Cognizance	---	SCG4	1.17	0.00	0.94	0.00	-1.72*
Social Cognizance	---	SCG2	1.09	0.00	0.92	0.00	-1.19
Social Cognizance	---	SCG1	0.96	0.00	0.81	0.00	-1.15
Social Cognizance	---	SCG6	1.10	0.00	1.03	0.00	-0.56
Operations performance	---	Qual1	1.00		1.00		
Operations performance	---	Qual2	1.13	0.00	0.93	0.00	-0.73
Operations performance	---	Qual3	0.97	0.00	0.63	0.00	-1.43
Operations performance	---	Flex1	1.31	0.00	1.46	0.00	0.46
Operations performance	---	Flex2	1.33	0.00	1.62	0.00	0.85
Operations performance	---	Flex3	1.40	0.00	1.66	0.00	0.76
Operations performance	---	Flex4	1.33	0.00	1.57	0.00	0.67
Firm Social Performance	---	FSPf1	1.00		1.00		
Firm Social Performance	---	FSPf2	1.14	0.00	1.56	0.00	1.7*
Firm Social Performance	---	FSPf3	0.99	0.00	1.43	0.00	1.7*
Firm Social Performance	---	FSPf4	1.05	0.00	1.50	0.00	1.8*
Supplier Opportunistic Behavior	---	SO2	1.00		1.00		
Supplier Opportunistic Behavior	---	SO3	0.86	0.00	0.87	0.00	0.11
Supplier Opportunistic Behavior	---	SO4	0.85	0.00	0.94	0.00	1.07
Supplier Opportunistic Behavior	---	SO6	1.00	0.00	0.90	0.00	-1.15
Supplier Opportunistic Behavior	---	SO1	0.90	0.00	0.94	0.00	0.57
Firm Social Practices	---	FSP4	1.00		1.00		
Firm Social Practices	---	FSP6	1.19	0.00	1.30	0.00	0.67
Firm Social Practices	---	FSP7	1.14	0.00	1.25	0.00	0.69

Firm Social Practices	--->	FSP3	1.09	0.00	1.36	0.00	1.7*
Firm Social Practices	--->	FSP2	1.07	0.00	1.26	0.00	1.22
Firm Social Practices	--->	FSP9	1.08	0.00	0.94	0.00	-1.02
Firm Social Practices	--->	FSP10	1.02	0.00	0.95	0.00	-0.52
Firm Social Practices	--->	FSP11	1.01	0.00	1.17	0.00	1.09

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

5.4.3 Path model invariance

The procedure for path model invariance testing is similar to measurement model testing where each path loading is constrained equal one-by-one while subsequent tests of the structural parameters are conducted. The baseline model comparison for the two groups had a χ^2 difference of 12.8 that indicated further investigation of invariance at path level.

The results of the path model invariance testing are provided in Table 5-8. As expected, most of the paths were found to be invariant across the two groups. One relationship between SSE capability and supplier opportunistic behavior was found to be non-invariant across the two groups with Group 2 (N = 103) having a positive and significant β for the path.

Since the reciprocity measure is an algebraic function of supplier opportunistic behavior, the two paths involving reciprocity were subsequently found to be non-invariant. In summary, although there is one path that displays significantly different output, the overall model could be regarded as invariant across the two groups.

Table 5-8: Path model invariance results

Relationships				Group 1 (N=134)		Group 2 (N=103)		z-score
				β	p-value	β	p-value	
H2	SSE	--->	Firm Social Performance	0.33	0.00	0.32	0.00	-0.13
H3a	SSE	--->	Firm Social Practices	0.97	0.00	1.17	0.00	1.32
H3b	SSE	--->	Supplier Opportunistic Behavior	-0.11	0.36	0.62	0.01	2.9***
H3c	SSE	--->	Reciprocity	-0.58	0.01	0.23	0.48	2.1**
H4a	Firm Social Practices	--->	Firm Social Performance	0.32	0.00	0.37	0.00	0.64
H4b	Supplier Opportunistic Behavior	--->	Firm Social Performance	-0.02	0.69	0.05	0.12	1.19
H4c	Reciprocity	--->	Firm Social Performance	0.07	0.02	-0.04	0.08	-2.7***
H5	Firm Social Performance	--->	Operations Performance	0.42	0.00	0.44	0.00	0.20

Notes: *** p-value < 0.01; ** p-value < 0.05; * p-value < 0.10

5.5 Robustness checks for archival measures

Several steps were taken to reduce concerns over measurement errors, non-response bias, and common method bias. In this section, I outline several robustness tests that further strengthen the validity of the results. First, in addition to return-on-sales (ROS) as a measure of financial performance, the path model was also tested for return-on-assets (ROA) and gross margin (GM) as dependent variables. ROA is net income before interest and tax divided by total assets while GM is the ratio of sales minus cost of goods sold (COGS) to sales (Azadegan et al., 2013; Ray, Barney, & Muhanna, 2004).

Both ROA and GM reflect how well the firm can generate sales using its resources (Azadegan et al., 2013). Therefore, ROA and GM reflect not only the efficient use of internal resources, but also the synergy between the firm's different business functions and the degree to which they meet increase sales demand while remaining a responsible organization (Kim & Lim, 1988). ROA and GM have been applied in earlier studies aimed at linking operations performance to financial performance of firms (Azadegan et al., 2013; Eroglu & Hofer, 2011). Table 5-9 shows that the direction and magnitude of proposed estimates are consistent with proposed hypotheses, thus providing the necessary ground for robustness of the study results.

Table 5-9: Robustness check - Financial performance measures

Relationships			ROS		GM		ROA	
			β	p-value	β	p-value	β	p-value
Operations Performance	--->	Financial Performance (2013)	0.016	0.003	0.001	0.827	0.012	0.014
Sustainability Performance (2013)	--->	Financial Performance (2013)	0.005	0.006	0.001	0.209	0.004	0.002
Firm Level Controls								
<i>Financial Performance (2011)</i>	--->	<i>Financial Performance (2013)</i>	0.522	***	0.929	***	0.378	***
Industry Controls								
<i>Munificence</i>	--->	<i>Financial Performance (2013)</i>	0.115	0.531	0.103	0.363	0.068	0.661
<i>Dynamism</i>	--->	<i>Financial Performance (2013)</i>	-0.323	0.002	-0.145	0.022	-0.264	0.003
<i>Complexity</i>	--->	<i>Financial Performance (2013)</i>	0.065	0.290	0.039	0.303	0.035	0.500

Chapter 6. Discussion & post-hoc analysis

This chapter discusses the results of the dissertation in detail. The chapter also includes results of a post-hoc model that was not part of the original hypothesized model.

6.1 Reciprocity of social practices and performance

There are some interesting insights to be gained by further investigating the results of the effect of reciprocity on social performance of firms. The construct ‘firm social practices’ is supplier centric, where respondents answered questions related to their firm’s emphasis on making their suppliers comply with local / national laws on child labor, wage disbursement and maintaining a safe and healthy work environment. For a firm with a relatively high score on the construct of supplier-centric ‘firm social practices’ would indicate that the firm is serious in its commitment towards maintaining a socially responsible supply chain. This commitment is exhibited by continuously reminding suppliers of their obligations in terms of code of conduct compliance and meeting expectations of the buyer firm. On average, most sampled firms reported moderate to high adoption of ‘firm social practices’ (Mean = 4.84, standard deviation = 1.7) signifying that the sampled large North American manufacturing organizations adopt the practice of asking their suppliers to continuously work towards developing socially responsible operations.

Similarly, the construct ‘firm social performance’ comprised of performance-based items related to expanding the list of social performance metrics for the supply base, stricter auditing procedures for existing suppliers and stringent screening requirements for new suppliers. On average, the social performance scores were high (Mean = 5.71, standard deviation = 1.0)

signifying that sampled large North American manufacturing organizations place great emphasis on improving their social performance and risk mitigation using rigorous supply examination.

Comparing the mean scores of supplier-centric firm social practices and firm social performance (4.8 vs. 5.7, $p < 0.05$) indicates that firms place greater emphasis on improving their own social performance rather than simply asking suppliers to improve their operations. This is a positive indication of firms trying to be exemplars for their suppliers. Based on the operationalization of 'firm social practices' construct and 'firm social performance' construct, a positive association between them (H4a: $\beta = 0.276$, $p < 0.001$) reinforces the importance of focusing on supplier management through the use of supplier-centric social practices as it can result in improved social performance.

Despite the valuable findings above, of more interest, was the effect of reciprocity (interaction) of social practices on a firm's social performance. In other words, I wanted to see the effect of social practices of a firm on its social performance in the presence of supplier opportunistic behavior. As discussed earlier, 'supplier opportunistic behavior' scale is reverse coded with smaller values indicating less opportunistic behavior and higher values indicating greater opportunism. A histogram of supplier opportunistic behavior, provided in Figure 6-1, shows large dispersion of supplier behaviors. This indicates the multitude of challenges that large manufacturing firms face, in terms of opportunistic behaviors, from their supply base.

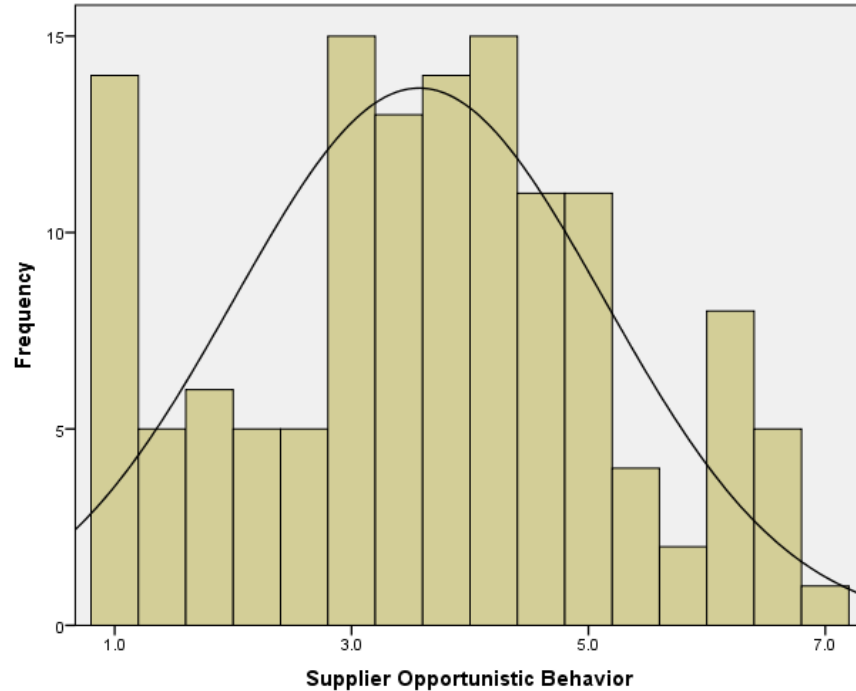


Figure 6-1: Histogram - Supplier opportunistic behavior

Based on the operationalization of supplier-centric ‘firm social practices’ and ‘supplier opportunistic behavior’, Figure 6-2 presents a 2×2 matrix illustrating four possible scenarios for the combined effect of firm social practices and supplier opportunistic behavior. As discussed earlier in this section, the most desirable scenario is when supplier-centric firm social practices are high and supplier opportunistic behavior is low. I label this scenario as ‘desired reciprocity’. The exact opposite of desired reciprocity is a scenario where the supplier-centric firm social practices are low and supplier opportunism is high. I label this scenario as ‘high-risk proposition’ as this is a potential social disaster waiting to happen. The third scenario that could occur is when a firm is focusing on supplier-centric social practices despite high supplier opportunism. I label this scenario ‘blind optimism’. There could be various reasons why such a scenario could exist including a firm’s persistent faith in its engagement efforts or a firm’s optimism that suppliers’

past opportunism would not replicate in future. The last possible scenario is an interesting one with low opportunism from suppliers without any concentrated supplier-centric efforts from the buyer firm. From a buying firm’s perspective, it is an ideal scenario but real-world evidence suggests that it is unusual for such a scenario to occur, especially in the case of suppliers operating in emerging economies. I label this scenario as ‘missed opportunity’.

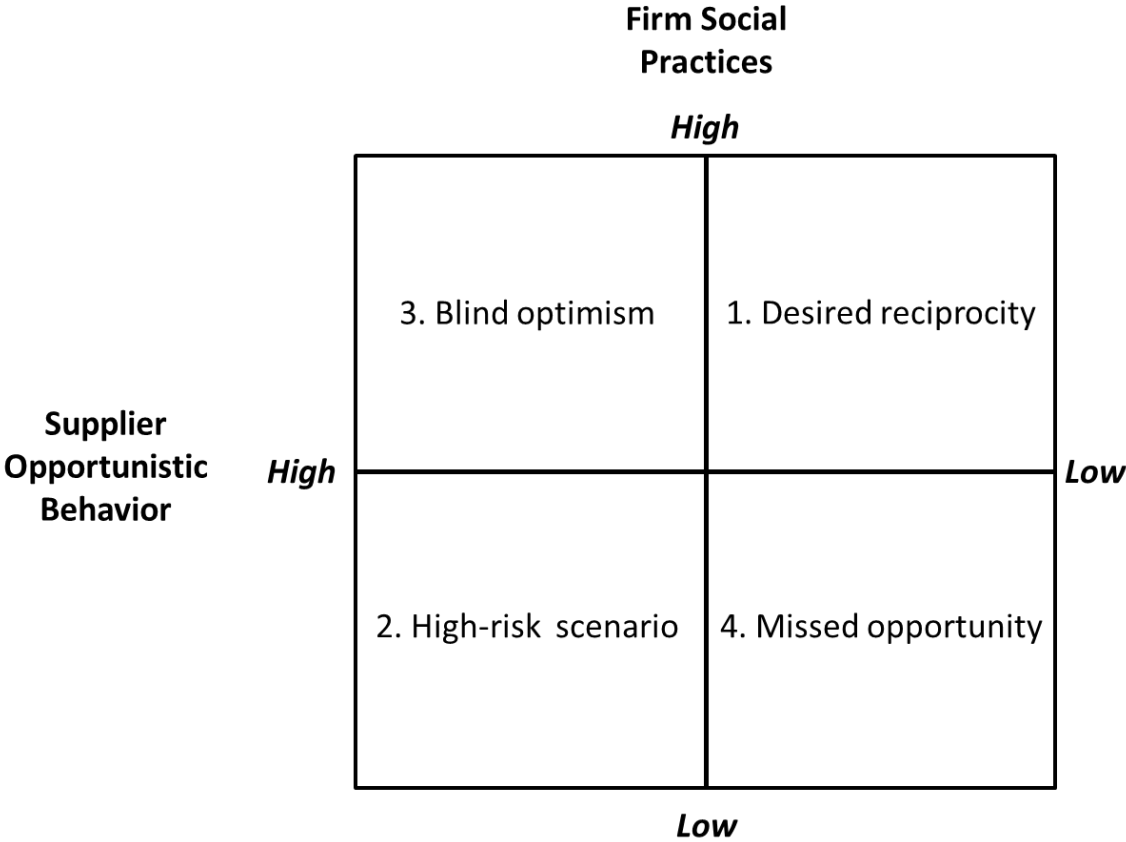


Figure 6-2: Matrix of reciprocity possibilities

Mapping the 2x2 matrix of possible scenarios onto the results of the reciprocity analysis, presented in Chapter 5 earlier, resulted in Figure 6-3. The four numbered circles in Figure 6-3 represent the four possible scenarios discussed above. There are many interesting inferences that can be drawn from Figure 6-3. First, the social performance gap is relatively high between

‘desired reciprocity (point 1 on Figure 6-3)’ and ‘risky proposition (point 2 on Figure 6-3)’, with ‘desired reciprocity’ resulting in a much higher social performance. This is a strong indication of the impact of reciprocity on social performance. Second, the social performance gap is narrower between ‘desired reciprocity (point 1 on Figure 6-3)’ and ‘missed opportunity (point 4 on Figure 6-3)’ as compared to the performance gap between ‘risky proposition (point 2 on Figure 6-3)’ and ‘blind optimism (point 3 on Figure 6-3)’. The inference is that as supplier opportunism decreases, supplier-centric ‘firm social practices’ have a smaller positive impact on social performance. In case of higher supplier opportunism, a firm must invest in its supplier-centric social practices to improve social performance.

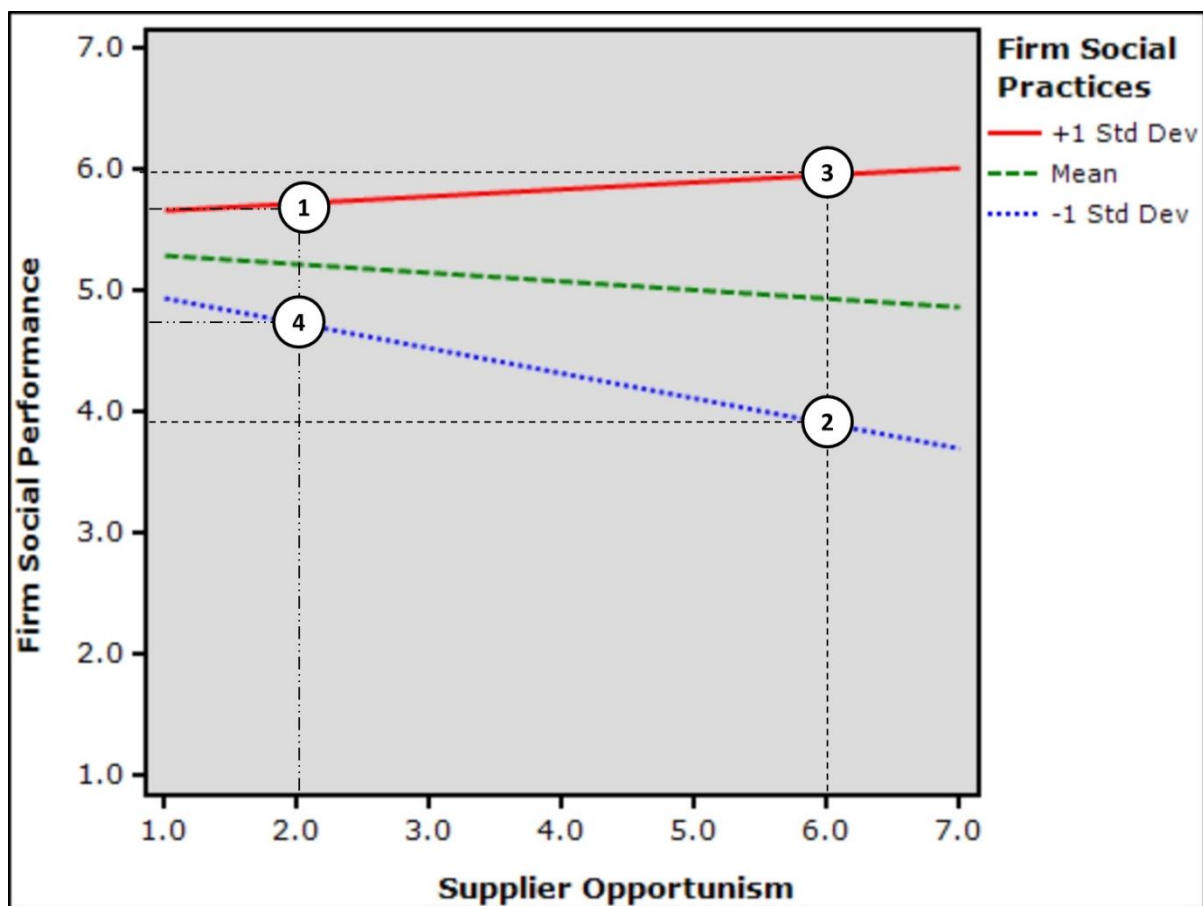


Figure 6-3: Mapping alignment matrix

6.1.1 Cluster Analysis

The inferences drawn from figure 6-3 are interesting. However, a major limitation of the discussion in the previous section is the lack of statistical evidence. In other words, I am not sure whether the four scenarios would hold statistical scrutiny in terms of performance differences.

In order to provide statistical validity to the discussion above, I conducted a cluster analysis to classify firms based on the combination of supplier-centric firm social practices, firm social performance and supplier opportunistic behavior. The clustering algorithm was run in two steps. Initially, hierarchical clustering was used, which is recommended when a dataset is large and the number of clusters is unknown. The composite scores for the three constructs of supplier-centric ‘firm social practices’, ‘supplier opportunistic behavior’ and ‘firm social performance’ were used as taxons in the cluster analysis. The second step used iterative K-means clustering with initial seeds given by hierarchical-cluster means from the first step. As shown in Table 6-1, the analysis identified a three-cluster solution, with 50, 51 and 33 firms classified into Clusters I, II and III, respectively. The three-cluster solution indicates a good distribution of firms across the three clusters. I also explored other cluster configurations ranging from two to five clusters; however, the three-cluster solution produced the best results.

The three cluster solution maps well onto the three out of four possible scenarios outlined in Figure 6-1. Cluster I, labelled ‘desired reciprocity’ had high scores for firm social practices, social performance, and low scores for supplier opportunistic behavior. Clusters II, labelled ‘risky proposition’ exhibited a contrasting pattern to Cluster I with lower scores for firm social practices, social performance and higher score on supplier opportunistic behavior. Cluster III, labelled ‘blindly optimistic’, exhibited a pattern of having high scores on firm social practices,

firm social performance and supplier opportunistic behavior. All cluster means were significantly different from each other at $p < 0.05$ level (refer to Table 6-1). The three-cluster solution is provided in a three-dimensional centroid plot (Figure 6-4), with firm social practices, firm social performance, and supplier opportunistic behavior as its axes. Figure 6-4 clarifies the relative positioning and the variation of performance across the three clusters.

Table 6-1: Cluster analysis results

	Desired reciprocity (Cluster I; N=50)	Risky proposition (Cluster II; N=51)	Blindly optimistic (Cluster III; N=33)	F-Statistic Value
Firm Social Practices ^a .				
Cluster mean ^b .	5.28	3.53	6.23	45.79 ***
Standard error ^c .	0.21	0.21	0.11	
Firm Social Performance				
Cluster mean	5.52	4.04	6.23	97.72 ***
Standard error	0.12	0.10	0.09	
Supplier Opportunism				
Cluster mean	2.02	4.08	5.13	124.0 ***
Standard error	0.12	0.12	0.19	

a. All cluster means are significantly different from each other at the 0.05 level

b. Represents the average score for a particular cluster.

c. The standard error of the estimate of the mean for the group.

In summary, the results of the cluster analysis are important as they provide statistical validity of the different approaches adopted by firms in face of varying degrees of supplier opportunism. The results also indicate strong social performance differences across the three cluster groups, strengthening the role of supplier-centric firm social practices in influencing positive social performance.

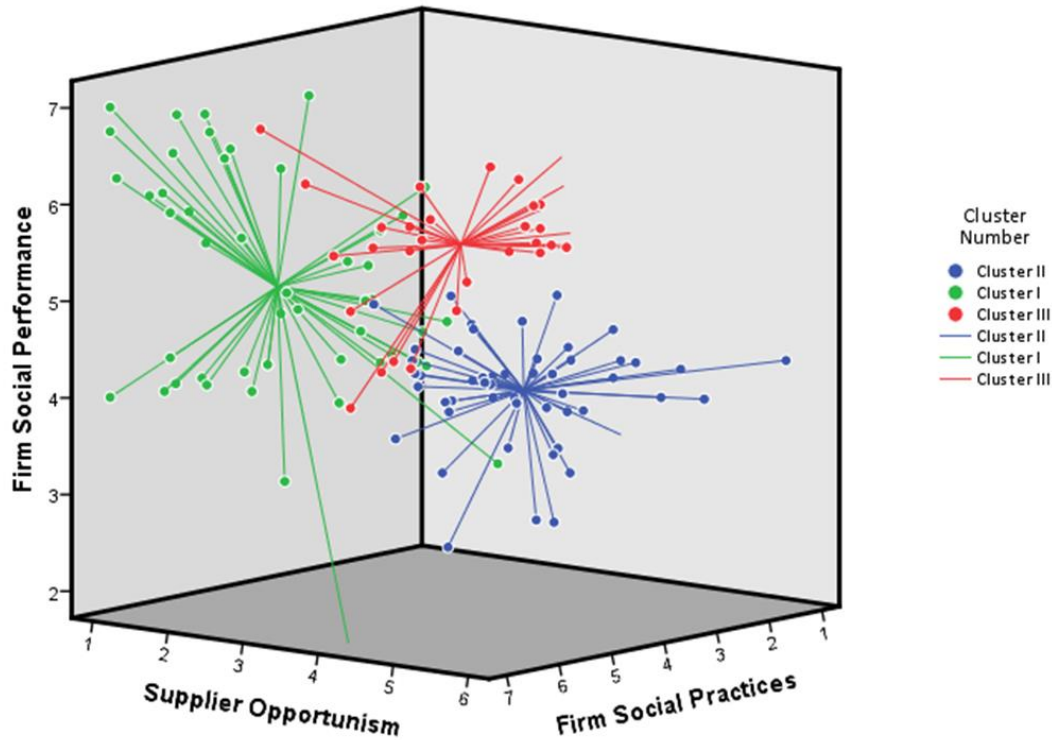


Figure 6-4: Centroid plot of three-cluster solution

6.2 SSE capability and performance

The results of Hypothesis 1 indicated the SSE capability could be thought of as a multidimensional construct consisting of four underlying dimensions of cultural astuteness, bi-directional communication, operations astuteness and social cognizance. Although, it was established in Section 5.1.1 that the four dimensions are complementary, the relative contribution of each dimension towards SSE capability was not discussed.

Referring to the results in Table 5-1 indicate that out of the four dimensions, bi-directional communication and operations astuteness have a standardized loading of 0.93 while cultural

astuteness and social cognizance have relatively lower standardized loadings of 0.87 and 0.78 respectively. These numbers suggest that social cognizance has a relatively smaller impact towards supplier engagement as compared to the other three dimensions. This is expected since social cognizance is the only dimension that is not supplier centric. In other words, cultural and operations astuteness are related to intelligence gathering about suppliers while bi-directional communication also relates to supplier advisement. Conversely, social cognizance as defined in this study is about a firm's knowledge or recognition of social issues throughout their supply chain. Therefore, having broad knowledge of social issues within a supply chain that are not supplier-centric, would not help resolve those issues with a specific supplier. These results reinforce the importance of supplier specific strategies for successful engagement.

The results of Hypothesis 2 suggested that SSE capability has a positive and significant impact on firm social performance, with a path loading of 0.354. The magnitude of the path loading is indicative of the strong effect of supplier engagement on social performance of firms. To be precise, a single unit increase in supplier engagement efforts could influence performance improvements of up to 35%. This makes a strong case for supplier engagement. However, supplier engagement is not without its costs; development of SSE capability requires significant investment of resources in terms of understanding supplier needs and tackling social issues in supply chains. Such an investment of resources will make better managerial sense, if SSE capability could be linked to operations and financial performance of firms. The performance impact of SSE capability is discussed in more details in the next section.

6.3 Post-Hoc partial mediation model

The discussion in sections 6.2 necessitated running a post-hoc model with two additional paths from SSE capability to operations performance and sustainability performance. The results of the

post-hoc model will help determine the mediation effect of SSE capability on operations and financial performance.

The revised model in structural form is provided in Figure 6-5, with the additional paths indicated by dashed red arrows.

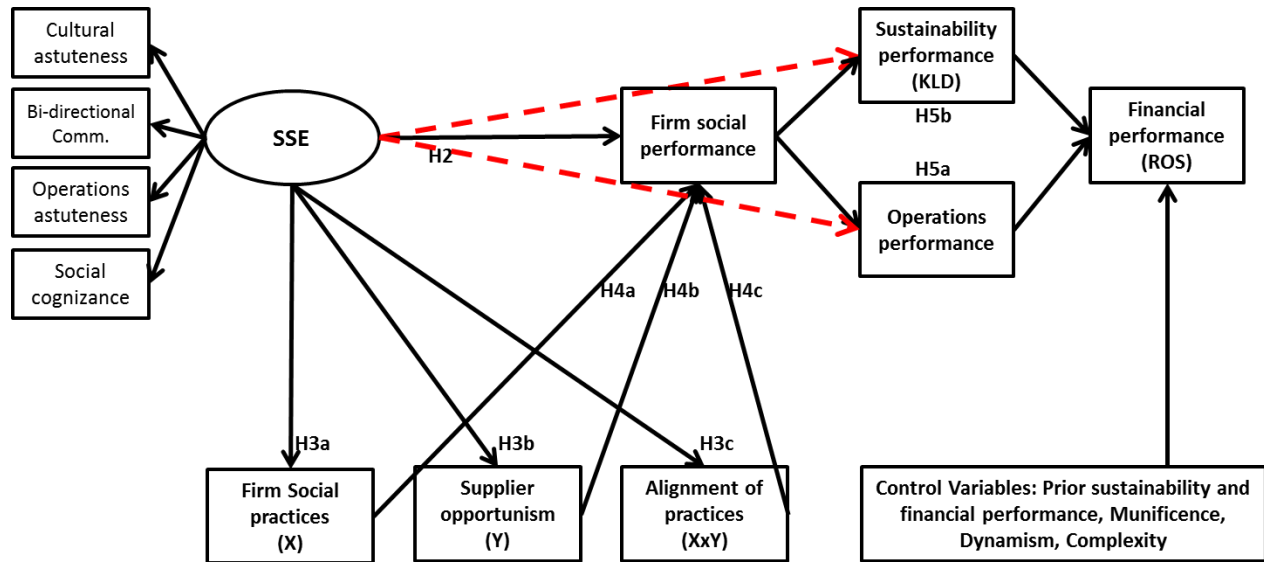


Figure 6-5: Post-hoc mediation model

Table 6-2 has the model-fit results for the post-hoc model. It is evident that the revised model has a better fit than the original hypothesized model with a smaller Chi-square (χ^2) value and improved CFI and RMSEA values.

Table 6-2: Post-hoc model-fit results

	Original Model	Post-Hoc Model
Chi-square (χ^2)	162.60	138.37
Degrees of freedom	83	81
Probability level	0.000	0.000
CFI	0.918	0.941
RMSEA	0.085	0.073

To further investigate the mediated effect of SSE capability on performance, I looked at the direct effects and indirect effects in the revised model. The revised results are presented in Table 6-3 while Table 6-4 has the breakup of direct, indirect and total effects for the SSE capability construct.

Table 6-3: Post-hoc model results

	Relationships		β	S.E.	C.R.	p-value
H2	SSE	---> Firm Social Performance	0.362	0.103	3.516	***
Post-Hoc	SSE	---> Operations performance	0.396	0.081	4.870	***
	SSE	---> Sustainability performance (2013)	0.078	0.277	0.282	0.778
H5	Firm Social Performance	---> Operations performance	0.275	0.066	4.165	***
	Firm Social Performance	---> Sustainability performance (2013)	-0.025	0.237	-0.107	0.915
	Operations performance	---> Financial performance (ROS 2013)	0.018	0.006	3.033	0.002
	Sustainability performance (2013)	---> Financial performance (ROS 2013)	0.005	0.002	2.784	0.005

The results of Table 6-3 suggest that SSE capability has positive effect on operations performance ($\beta = 0.396$, $p < 0.001$). However, a relationship could not be established between SSE capability and sustainability performance ($\beta = 0.078$, $p = N.S.$).

In order to assess the indirect effect of SSE capability on performance measures, I ran a mediation algorithm in AMOS v17.0.0. The results of the mediation analysis suggest that SSE capability has a positive and significant effect on a firm's social performance (total effect = 0.638) and operations performance (total effect = 0.396). I also found weak evidence of SSE

capability effecting financial performance (total effect = 0.01). However, there was no evidence found of SSE capability influencing sustainability performance.

Table 6-4: Post-hoc model – Effects of SSE capability on performance variables

	Direct effect	Indirect effect	Total effect	Significant at p < 0.05
Firm social performance	0.362	0.277	0.638	Yes
Operations performance	0.396	0.175	0.572	Yes
Sustainability performance (2013)	0.078	-0.016	0.062	No
Financial performance (ROS 2013)	0	0.01	0.01	Yes

6.4 Summary

To summarize, the results of the dissertation have provided some very interesting insights into the different approaches employed by firms to engage their suppliers operating in emerging economies. The results are encouraging as I was able to show a positive association between the engagement practices of firms and their operations and financial performance. Reciprocity was also shown to positively influence social performance. Moreover, the post-hoc cluster analysis results revealed the different approaches adopted by firms towards developing and maintaining socially responsible supply chains.

Chapter 7. Conclusion

The success of GAP Inc. in engaging various stakeholder groups to create and maintain an image of a responsible corporate citizen has created a drive in the industry of understanding and undertaking stakeholder engagement (Smith et al., 2011). This trend is evident by inclusion of dedicated sections on stakeholder engagement in recent corporate sustainability reports of some of the largest North American manufacturing organizations. However, engaging stakeholders requires investment of resources; first to understand who the relevant stakeholders to an organization are, second to identify their concerns and finally to take affirmative actions to address their concerns. A quick review of the sustainability literature points to a lack of theoretical frameworks for engaging specific stakeholder groups. Moreover, the performance implications of such stakeholder engagement are also not clear.

My dissertation intends to fill this gap by conceptualizing and operationalizing the multi-dimensional construct of stakeholder engagement targeted at suppliers in emerging economies. Suppliers are considered an important stakeholder group (Mitchell et al., 1997) and a socially and ecologically responsible supply chain is not possible without the cooperation of all partners including suppliers operating within a supply chain (Reuter et al., 2010). Supplier social engagement, as conceptualized here, is not the same as supplier development nor corporate social responsibility. This dissertation explores the cultural and operational astuteness needed to address both buyer and supplier shortcomings. The main research question addressed in the dissertation is: *How can firms engage suppliers operating in emerging economies, to behave in a socially responsible manner?*

By combining both survey-based methods and archival data, this dissertation examined the antecedents and outcomes related to supplier social engagement and addressed the performance implication of engaging suppliers. Specifically, the dissertation proposed that supplier social engagement is capability of higher order that could exist as a combination of underlying sets of resource and / or routines. Based on a review of recent corporate sustainability reports and research literature on stakeholder engagement, it was proposed that supplier social engagement capability could be thought of as a mix of relational and transactional mechanisms, consisting of four underlying dimensions of cultural astuteness, bi-directional communication, operations astuteness and social cognizance. Moreover, the four underlying dimensions were hypothesized to be complementary i.e. the combined effect of the four dimensions on performance was deemed higher than the summing the individual effects of each dimension. The supplier social engagement capability was operationalized as a latent second-order construct with four reflective first-order dimensions. It was further proposed that this engagement capability helps create an environment of reciprocity where both the buyer and the supplier firms engage in collaborative exchanges rather than behaving opportunistically. The last part of the theoretical model proposed positive performance impacts of both the supplier social engagement capability and reciprocity.

The results of the dissertation provided support for most of the proposed hypotheses. I was empirically able to establish that SSE capability is a second-order construct consisting of four first-order constructs as its underlying dimensions. Furthermore, the results supported the notion of complementarity among the four SSE capability dimensions. Both SSE capability and reciprocity were found to positively influence social and operations performance. The findings of the reciprocity analysis suggested further probing the data. A cluster analysis with firm social practices, supplier opportunistic behavior and firm social performance as its taxons led to a

three-cluster solution (details in the Chapter 6). Finally, an exhaustive assessment of the initial proposed model and its results led me to propose a post-hoc model with additional hypothesized relationships. The results of the post-hoc model had a higher explanatory power with better results.

7.1 Contributions

The dissertation provides several theoretical and managerial contributions. First, the concept of stakeholder engagement focused on suppliers operating in emerging economies has not been addressed in previous operations management research. The topic has relevance as firms are under pressure to maintain socially and ecologically responsible supply chains; especially that include outsourced operations to emerging economies. Emerging economies such as India, Brazil, Indonesia, Malaysia, etc. present themselves as a viable outsourcing alternative because of low cost and comparable quality of goods produced. However, the governance structure in these economies is not as established as compared to the developed countries like the U.S., Canada or Western Europe. The lack of governance mechanisms pose a considerable social risk to firms outsourcing to these regions (Klassen & Vereecke, 2012). Supplier social engagement is proposed as a possible mechanism to reduce some of the uncertainties involved in working with suppliers from emerging economies and hence is a contribution to the expanding literature on socially responsible supply chain operations. On similar lines, relatively less research has been carried out on the social side of sustainability as compared to the environmental side of sustainability (Linton et al., 2007). This study will add depth to the current social responsibility research by adding the dimension of social engagement.

The second contribution of the research is assessing reciprocity from a social responsibility perspective. Reciprocity is the belief that a firm acting to benefit a partner organization will be

reciprocated favorably for such behavior at a future point in time. Within the operations management literature, the concept of reciprocity is well grounded in studies related to buyer-supplier relationships. However, reciprocity of social practices has not been previously discussed. Moreover, reciprocity was assessed using the concept of fit of practices; a technique that is usually employed in strategy research to assess fit or congruence.

The third contribution of the study is development of new scales through a rigorous two-stage process. These scales will be useful for future studies on the topic of supplier engagement and responsible supply chains. The scales of cultural astuteness, operations astuteness and social cognizance could have a broader use as each of them was conceptualized as a standalone resource that a firm possesses. Therefore, it is expected that future studies would incorporate these scales in their research to probe new research ideas and / or questions.

The fourth contribution of the study is the simultaneous use of survey and archival data to validate the study hypotheses. There are several advantages of using a combination of primary and secondary data sources and the biggest advantage of this approach is the elimination of bias. Surveys are a great source of data collection on issues for which archival data is not readily available. However, a relevant critique on data collected through surveys only is the presence of biases such as single respondent bias, social desirability bias and common method bias. By combining survey and archival data, the presence of such biases is reduced. In the specific case of this dissertation, this is relevant because responding to questions on social practices, social performance and supplier opportunism is susceptible to high social desirability. The inclusion of secondary performance measures of aggregate sustainability performance from the KLD database and financial performance from the COMPUSTAT database strengthens the results of the study and provide much needed validity to the survey responses.

The fifth contribution of the study is the findings of the cluster analysis. The cluster analysis revealed three different types of groups, each segregated based on its social practices, supplier opportunism level and social performance. The three-cluster framework provides managers a working template to compare and map the social engagement efforts of their firms with that of the three clusters. The discussion on the results of the cluster analysis provides managers useful guidelines on how to navigate between different clusters and the performance implications of so doing.

7.2 Limitations

While this thesis makes a number of valuable contributions to the understanding of supplier engagement and its performance implications, there are several limitations that are worth noting.

The number of usable responses collected for the study (N=237) were adequate for a structural equation model analysis (Kline, 2011). However, the use of archival performance measures forced me to split the sample; first sample having 134 responses for the main analysis and the second sample comprising of 104 responses, which was used as a holdout sample for robustness checks. Therefore, the effective sample size of 134 responses necessitated the use of path model instead of a structural model. While the high composite reliabilities for all constructs in the study ensured robustness of results due to smaller error variance, the use of a structural model would have been more conventional. Since I was focusing on large U.S. manufacturing firms, a larger sample size would also increase the representation of the sample from the population.

The possibility of a single respondent bias is also a limitation of the study. Although, I tried to recruit senior respondents, who were knowledgeable about their role and their firms, single respondent bias could still be an issue. Moreover, since the survey had questions related to a

firm's own social practices and social performance, there is a possibility of social desirability bias in the responses gathered.

This research employed cross-sectional data collection method, focusing on a single-point in time view of supplier social engagement. This could be problematic as it can be argued that there could be a lagging effect between supplier engagement efforts and resulting reciprocity of social practices. A lack of statistical evidence for the relationship between supplier engagement and reciprocity could be attributed to the cross-sectional nature of the data. In order to account for the longitudinal performance effects, past sustainability and financial performance data was added to the analysis for control purposes. However, a longitudinal data collection effort would strengthen the conclusion of the study. Therefore, as discussed in the following section, a potential future research opportunity lies in taking a longitudinal approach to the study of the phenomenon.

7.3 Future research

My dissertation explored the organizational determinants of supplier engagement. In the previous section outlining limitations of this dissertation, I commented on the generalizability of findings to manufacturing firms only. A potential future opportunity exists in extending the framework to service firms, especially supplier firms that offer services. Social issues are not specific to manufacturing firms and suppliers offering services can behave in a similarly opportunistic manner as manufacturing-based suppliers. The application of the theoretical model should be tested in service organizations.

While examining the extent of collaboration in buyer-supplier relationships, Nyaga, Whipple, & Lynch (2010) conducted a dyadic study to test the study hypotheses. Similarly, Jap & Anderson (2003) also conducted a dyadic study to get responses from both parties in a buyer-supplier

relationship. In order to better understand, supplier engagement, future studies can look beyond organizational determinants of supplier engagement and should try to capture the views of the suppliers as well. Moreover, extending this research from cross-sectional data collection to longitudinal research design would be beneficial to understand the evolution of supplier social engagement efforts from buyer firms and the corresponding reduction in supplier opportunistic behavior. The results of cluster analysis revealed a group of firms that were optimistic about their suppliers (i.e., despite of opportunistic behavior exhibited by suppliers, the buyer firms were still investing heavily in engagement efforts). A longitudinal study would help understand the progression of such relationships that will add value in understanding the tipping point for either the buying firm or the supplier.

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Appendices

Appendix A: Content Analysis

Firm	-	Intel	Coca Cola	Mattel	GAP	Johnson & Johnson	Disney	Bristol-Myers Squibb	Ecolab	Microsoft	Weyerhaeuser
Engagement Performance Metrics	Suppliers	PASS program to Tier-1 suppliers, Monitoring based, auditing of Tier-1 suppliers; code of conduct compliance	Focus on monitoring	Monitoring Subcontractors Subcontractors; QMS process including auditing for compliance with Mattel's GMP.	Monitoring and Capacity Building programs.	Standardized terms and conditions exist and help guide the foundation of J&J's formal agreements with suppliers. While Johnson & Johnson does not reward or incentivize supplier performance, it maintains processes to assist its suppliers in assessing, and where necessary, improving their performance.	Visibility of suppliers' facilities, increased financial and other support for independent programs and initiatives addressing core labor issues within its supply chain	Suppliers are not mentioned under stakeholder engagement: stakeholders with whom BMS has engaged include patients, health care providers, employees, communities where it operates, insurers, governments, investors, sustainability organizations and academic institutions. BMS intends to expand principles of sustainability and performance indicators at key suppliers in year 2015	Claims of robust supplier disclosure and procurement management systems; working with suppliers to ensure that Ecolab's expectations under REACH are understood.	Supplier engagement using their Social and Environmental Accountability (SEA) program; all Tier 1 and high- and medium-risk Tier 2 suppliers undergo initial capability assessments and audits; a detailed a scorecard that grades each factory on its conformance with our SEA requirements	Detailed statistics tracked over a three year period
	Other stakeholders	Detailed statistics outlining work with several stakeholder groups over a period of five years	Initiatives such as Replenish Africa Initiative (RAIN), work with the World Resources Institute's Aqueduct project, project recover and ekocycle.	A comprehensive list of various initiatives exist	Global Reporting Initiative (GRI), the Dow Jones Sustainability Index, Corporate Responsibility Officer, Ethical Trading Initiative, Social Accountability International, As You Sow, and Free2Work	We foster and maintain ties with the suppliers and external manufacturers who help us make our products; the customers who purchase our products, the doctors, nurses, patients and consumers who use them; and our own employees and shareholders.	Follows the global reporting initiative's G3 Sustainability Reporting Guidelines that provide a comprehensive set of indicators covering the economic, environmental, and ethical impacts of Disney's performance.	Relatively narrow set of metrics focussed on philanthropy, employee health and safety and diversity	In 2014, Ecolab engaged with a broad range of industry groups, including the Food Marketing Institute, National Restaurant Association, Grocery Manufacturers Association, Consumer Specialty Products Association, AISE, American Cleaning Institute, Beverage Industry Environmental Roundtable, Sustainable Purchasing Leadership Council, Practice Greenhealth and World Travel and Tourism Council.	Detailed statistics available over philanthropic activities, progress and future plans	Detailed statistics tracked over a three year period
Materiality	Suppliers	Some emphasis on materiality in terms of supply chain responsibility	No supply chain related assessment was mentioned	No details are provided	Outlines a periodic review process for assessing the universe of issues that could exist in its supply chain	Has specific performance metrics	Highlight the need for greater visibility into its supply chain to understand and address core social issues	There is not much in the report on understanding social issues that could exist within supply chains	Less attention to social issues in the report	The list of issues that need to be addressed within Microsoft's supply chain are based on ESG categories; their realization of the dynamic nature of social issues seems to be lacking	Mostly environmental concerns are pointed out and addressed with little emphasis on social issues within supply chain
	Other stakeholders	Use of Materiality Framework developed by AccountAbility to develop 2x2 materiality matrix	A formal assessment based on the use of Global Reporting Initiative G4 guidelines is yet to be carried out but the need to do a materiality assessment is highlighted	Five different criterions for materiality assessment	In its sustainability reporting, materiality represents the degree to which an issue is significant to society and GAP's interested stakeholders, and the degree to which it is relevant to Gap Inc.'s scope of operations and ethical commitments.	Detailed Citizenship & Sustainability materiality assessment	A vast array of social issues are a part of Disney's annual reporting structure	The focus is more on environmental issues than social issues	Less attention to social issues in the report	Claims of learning from groups such as Business for Social Responsibility, the Clinton Global Initiative, and the World Economic Forum and other advocacy groups, socially responsible investors, corporate responsibility rating agencies, other external stakeholders, and our own employees to identify new and emerging citizenship issues.	Focus on social issues of employees and communities; overall good coverage of issues including compensation, diversity etc.

Firm	-	Intel	Coca Cola	Mattel	GAP	Johnson & Johnson	Disney	Bristol-Myers Squibb	Ecolab	Microsoft	Weyerhaeuser
Communication	Suppliers	Bi-directional including information exchange	Recognize suppliers as a stakeholder group; Use of Supplier Guiding Principles (SGP) for communicating its values and expectations from suppliers	A one-way communication of Mattel's Global Manufacturing Principles serve as a foundation for ethical manufacturing efforts. It communicates Mattel's expectations for responsible factory working conditions, environmental protection and appropriate oversight to ensure non-compliances are identified and corrective actions are taken	A Global Integrity and Compliance Team that closely examines high-risk relationships and outlines GAP's expectations during contract negotiations and other communications with suppliers	One-way mostly: expectations for human rights, business ethics, labor practices, health and safety, and environmental performance are established in Responsibility Standards for Suppliers, and may also be defined in contracts with suppliers.	One way communication of its expectations and requirements for responsible sourcing and production complemented by actively monitoring performance against expectations	While explaining its commitment to various stakeholder groups, BMS mentions patients and customers, employees, global communities, shareholders but not suppliers. For suppliers, the following statement is used: We take our commitment to economic, social and environmental sustainability seriously, and extend this expectation to our partners and suppliers.	Uni-directional in the form of passing on expectations of compliance to its suppliers	Claims of engagement with suppliers through capacity building workshops and trainings, supplier advisory boards, and industry coalitions, such as the Electronics Industry Citizenship Coalition. Microsoft also conducts anonymous Voice of the Supplier Surveys, which include questions on citizenship issues.	Uni-directional: Report claims that Weyerhaeuser provides information to promote sustainable forestry practices among owners of small forests that supply its mills with wood fiber. All suppliers must comply with our Supplier Code of Ethics.
	Other stakeholders	Bi-directional including continuous feedback from external stakeholders	Recognition of the need to have an active dialogue with a diverse group of global partners, including employees, consumers, customers, bottlers, distributors, shareowners, investors, nongovernmental organizations (NGOs) and non-profit partners.	Focus on communication and dialogue to engage stakeholders	The Global Supply Chain team has held workshops to increase awareness and understanding of different cultures and communication styles	Bi-directional including performance feedback	Claim of actively listening to and learning from stakeholders and to provide them with information to better understand Disney's actions and intentions.	The report mentions BMS having a long tradition of communication and cooperation with its stakeholders on environmental, social and economic issues. Most communication is bi-directional as BMS claims to use information gathered from engagement to assess its sustainability performance and strategy, determining the scope and content of information shared with the public, and shaping the company's programs and actions.	The focus of the firm is clearly more on environmental sustainability than social sustainability. Most communication with external stakeholders is bi-directional but on issues of environmental sustainability	Bi-directional communication to a variety of stakeholders (mentioned as thousands of stakeholders) globally ranging from parents concerned about their child's online safety to international human rights experts.	Bi-directional as claims of both communicating and listening to stakeholders is mentioned
Partnerships / Collaborative activities	Suppliers	Supplier development activities, including educational resources, webinars, and a Supplier Sustainability Leadership Summit.	Participation in industry working groups,	Recognizes the need to engage suppliers but no framework is provided on how to approach supplier engagement	Vendor engagement is term used and is focussed on collaboration and supplier development. No specific initiatives are provided.	Regulatory compliance of suppliers and vendors is monitored and audited by J&J's Regulatory Compliance and Procurement organizations.	Mentions that Disney supports the ethical production of Disney-branded merchandise through programs focused on safety, labor, and the environment; collaboration with strategic suppliers and licensees, conduct a pilot study of a tracking and verification process that includes (1) annual supplier source origin surveys for paper products and (2) annual random fiber tests. If fiber from unwanted sources is found as a result of the pilot study, coordinate with suppliers and/or licensees to identify how the fiber entered the supply chain and to determine feasible steps to eliminate it	Supply chain partnership to promote EHS improvements key suppliers. Supported industry supply chain initiatives to develop supplier sustainability expectations, helped pilot programs with suppliers, and rolled out environment, health & safety expectations for key suppliers in conjunction with an audit program.	Examples of environmental collaboration provided but nothing specific on social collaboration	Claims of collaboration with suppliers on proactive initiatives to positively impact their suppliers' workers, the communities in which the suppliers operate, and their own businesses	Mention suppliers as a group requiring stakeholder engagement. However, engagement expectation is flow of info. from the firm to the suppliers only. Expectations for suppliers include the standard terms of purchase that apply to our U.S., Canadian and European-based supply contracts
	Other stakeholders	face-to-face meetings, web and social media channels	Recognize the value of maintaining an active dialogue with a diverse group of global partners, including employees, consumers, customers, bottlers, distributors, shareowners, investors, nongovernmental organizations (NGOs) and non-profit partners.	A recognition exists that through engagement, there is a higher likelihood that actions will provide value to a broader group of stakeholders. The current objectives include transparent reporting while simultaneously focusing on enhancing interaction with stakeholders on strategic initiatives	Mentions many formal memberships in multi-stakeholder initiatives such as Ceres, the Ethical Trading Initiative	Numerous examples of partnerships with a large array of external stakeholder groups	Stresses the need to create lasting, positive change in the communities in and / or procure; achieved through contributions, collaborations with local organizations, in-kind gifts, and sheer people power.	Facility-level community outreach on EHS and sustainability topics; Social policies and metrics to raise corporate awareness of social issues	Ecolab is leading significant scientific and regulatory coalition work on REACH, the European Union's Registration, Evaluation and Authorization of Chemicals. Its commitment includes securing the long-term future of important cleaning and sanitizing chemistries upon which customers can rely, helping customers understand their obligations under REACH, and working with suppliers to ensure that its expectations under REACH are understood.	Citizenship and Public Affairs team develops and coordinates global strategies that are implemented through local citizenship teams and non-profit partners to meet unique local needs and conditions.	Multilayered including giving funds, providing business support, research and employee volunteerism

Firm	-	Intel	Coca Cola	Mattel	GAP	Johnson & Johnson	Disney	Bristol-Myers Squibb	Ecolab	Microsoft	Weyerhaeuser
Importance to cultural understanding	Suppliers	Recognizes that policies will vary depending on national circumstances and cultures	No specific details available	Stresses the need to reinforce its culture of ethical conduct and set an example as a responsible member	Highlight that it is challenging to ensure that workers in diverse regions—with differing laws, cultures, and economies—work in safe and fair conditions; P.A.C.E. program designed for flexibility and sustainability	Highlight the need to understand supplier diversity; For example, it is mentioned that a strong commitment to supplier diversity has allowed J&J to enhance its supplier network, support job creation in local communities, and strengthen ties to the consumers, patients and doctors who benefit from its products and services.	Nothing specific mentioned	Nothing mentioned	Nothing specific on the need and importance of understanding supplier culture	Nothing specific on the need and importance of understanding supplier culture	Nothing specific mentioned
	Other stakeholders	Focus on building multicultural awareness through mentoring, and community projects	Highlights its diversity by presenting percent of employee base by race/ethnicity; nothing specific on the need to develop cultural awareness	Stresses the need to respect diversity, differences and cultures	Asians Supporting Inclusion and Awareness (ASIA) program as a means for community outreach, and sharing different cultures	Claims of active roles in educational, civic, cultural and faith-based organizations around the world.	Multiculturalism is mentioned as a necessity for operations of Disney as its customer base is diverse	A focus on driving an inclusive corporate culture but other than that no other mentioning of culture	Nothing specific available	The Microsoft Local Language Program. Microsoft collaborates with local governments, language authorities, universities, and NGOs to provide individuals access to computing in their native language.	Highlight the need to develop cultural sensitivity to communities in which it operates

Appendix B: Letter of introduction



London Toronto Hong Kong

Project Title: Managing supplier relations in emerging markets
Principal Investigator: Professor Robert Klassen, Associate Dean, Faculty Development & Research
Co-Investigator: Asad Shafiq, PhD candidate

Dear XXXXXXX,

With the globalization of manufacturing and supply chain operations, every company faces challenges to manage supplier relations. To address this need, my research focusses on managing supplier relations in emerging markets and how it affects supply chain performance. I am a PhD candidate at Ivey Business School conducting a research project with Professor Robert Klassen. To validate my research, I am inviting a number of managers, like you, who work in the manufacturing sector in North America to participate in a questionnaire-based survey. We would greatly appreciate your firm's participation to ensure that we are able to capture a wide range of practices. The results of the study will offer operations and supply chain managers a framework to assess the interaction between the supply chain function and their suppliers.

The purpose of this letter is to provide you with information required for you to make an informed decision regarding participation in this research. If you agree to participate, you will be asked to fill in a questionnaire. There is no time limit for completing the questionnaire, although the estimated time for its completion is approximately 30 minutes. There are no known or anticipated risks from participating in this study.

Your participation in this study is voluntary. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time. All data will remain strictly confidential and will only be accessible by the two researchers. If the results are published, your name will not be used. The data will be kept on file for five years and then destroyed. If you choose to withdraw from this study, your data will be removed and destroyed from our database. Representatives of Western University's Non-Medical Research Ethics Board may contact you or require access to your study-related records to monitor the conduct of the research. The collected information will be used only to advance knowledge and for the dissemination of the overall results at academic or professional forums. Your name and email address will not be linked to or stored with the questionnaire data to maintain the anonymity of your responses. We will only use this information to send you a summary of study results. Please note that completion of the questionnaire is indication of your consent to participate in this research project and that you will not be compensated for your participation in this research.

Should you have any questions or concerns about this study, please contact me, Asad Shafiq (██████████) or the principal investigator, Robert Klassen, (██████████). If you have any questions about the conduct of this study or your rights as a research participant, you may contact the Office of Research Ethics at Western University (██████████).

I would be very grateful if you accept my invitation to participate in this research and return this questionnaire by XXX XX, 2014. A pre-paid return envelope is enclosed. We thank you in advance for participating in this study. If you wish to submit your survey online, it is available at <http://go.ivey.ca/msr> and your pin code is:

Sincerely,

Asad Shafiq
PhD Candidate - Operations Management
Ivey Business School at Western University
1255 Western Road, London, ON, Canada, N6G 0N1
██████████

REB ID: 105888
Version Date: 11/27/2014



Managing Supplier Relations in Emerging Markets

If not completing online, please return the completed survey using the enclosed return envelope.

Managing Supplier Relations in Emerging Markets

Thank you for responding to our invitation to participate in this survey! This study is important for the community of supply chain and operations managers and professionals in North America.

This survey will ask you questions about your firm’s relationship with a supplier operating in an emerging economy that is important for your firm.

Please take a moment to recall a single, specific supplier from an emerging economy such as Bangladesh, Brazil, China, India, Mexico etc. that is important to your firm. It is preferable if the chosen supplier has been working with your firm for at least two years. Answer all questions in the survey with respect to your chosen supplier, with the exception of some questions towards the end of the survey that explicitly ask about all suppliers.

Throughout the survey, ‘our firm’ refers to your organization while ‘the supplier’ refers to the supplier operating in an emerging economy chosen by you.

In some cases, you may not have the precise data required to answer the question. If that is the case, please provide your best estimate; earlier research has shown that it is more important to have approximate answers than none at all.

If you wish to submit your survey online, it is available at go.ivey.ca/msr and your PIN Code is: *******.

1. SUPPLIER CHARACTERISTICS

Please recall a single, specific supplier from an emerging economy that is important to your firm.

1. a. Where is the head office of this supplier located? _____
- b. Where is the facility that supplies your firm located? _____
2. How long have you been working with this supplier (in years)? _____
3. What is the nature of parts provided by the supplier?
(for example: critical subassembly, raw material, etc.) _____

2. SUPPLIER INTERACTION

2.1 Operations Knowledge

Please indicate the extent to which the following is true for your firm. Our firm('s): (Please think of your important supplier from an emerging economy while answering these questions)

	Not at all		Moderate			To a great extent	
	1	2	3	4	5	6	7
: is actively engaged in understanding and managing supplier capacity	1	2	3	4	5	6	7
: discussions with the supplier on production bottlenecks results in useful information sharing	1	2	3	4	5	6	7
: always has an employee who understands supplier operations well	1	2	3	4	5	6	7
: commits our supplier to regular sharing of operations information such as inventory levels, daily production, and weekly production plan	1	2	3	4	5	6	7
: uses site visits as a means of evaluating the state of our supplier’s manufacturing operations	1	2	3	4	5	6	7
: has a fairly good idea about our supplier’s demand seasonality	1	2	3	4	5	6	7

2.2 Communication

Please indicate the extent to which your company does the following communication activities. Our firm and our supplier: (Please think of your important supplier from an emerging economy while answering these questions)

	Not at all		Moderate			To a great extent	
: have frequent contacts on a regular basis	1	2	3	4	5	6	7
: have open and two-way communication	1	2	3	4	5	6	7
: believe in having informal communication	1	2	3	4	5	6	7
: have several different channels to communicate	1	2	3	4	5	6	7
: influence each other's decisions through discussion rather than formal requests	1	2	3	4	5	6	7

2.3 Cultural Awareness

Please indicate the extent to which the following is true for your firm. Our firm: (Please think of your important supplier from an emerging economy while answering these questions)

	Not at all		Moderate			To a great extent	
: makes an effort to understand the organizational culture of our supplier	1	2	3	4	5	6	7
: values the importance of understanding our supplier's organizational culture for fostering a healthy relationship	1	2	3	4	5	6	7
: believes that cultures affect the way firms conduct their business	1	2	3	4	5	6	7
: generally is willing to adapt to cultural differences between us and our supplier	1	2	3	4	5	6	7
: is aware that the norms for business communication could be different in our supplier's culture	1	2	3	4	5	6	7
: undertakes conscious steps to familiarize ourselves with the supplier country's legal and cultural environment	1	2	3	4	5	6	7

2.4 Awareness of Social Issues

Social issues generally include activities that can directly or indirectly affect human safety and welfare. Examples of social issues in supply chains include such aspects as working conditions, child labor, overtime hours, and fair wages.

Please indicate the extent to which the following is true for your firm. Our firm('s): (Please think of your important supplier from an emerging economy while answering these questions)

	Not at all		Moderate			To a great extent	
: supply chain personnel are aware of various international social accountability standards such as SA8000 or the ILO's eight core conventions on labor and human rights	1	2	3	4	5	6	7
: consults industry peers to advance our knowledge of potential social issues in supply chains	1	2	3	4	5	6	7
: conducts on-going research on acceptable / unacceptable social practices in supply chains	1	2	3	4	5	6	7
: regularly updates its supplier 'Code of Conduct' on the basis of revisions to international standards such as the ILO's eight core conventions and / or SA8000	1	2	3	4	5	6	7
: supplier 'code of conduct' is based on an industry-wide code of conduct standard	1	2	3	4	5	6	7
: supplier 'code of conduct' has operational-level details on social issues such as allowable working hours, labor practices and discrimination	1	2	3	4	5	6	7
: newsletter has a section dedicated to awareness of social issues within our supply chain	1	2	3	4	5	6	7
: is fast to detect changes in public opinion on acceptable / unacceptable social practices	1	2	3	4	5	6	7

3. SUPPLIER RELATIONS

3.1 Supplier Behavior

In a buyer-supplier relationship, sometimes suppliers can exhibit opportunistic behavior when a problem occurs. When a problem occurs, how often will the supplier do the following? Our supplier: (Please think of your important supplier from an emerging economy while answering these questions):

	Never		Sometimes			Very often	
: makes hollow promises	1	2	3	4	5	6	7
: “window dresses” its efforts to improve	1	2	3	4	5	6	7
: expects us to pay for more than our fair share of the costs to correct the problem	1	2	3	4	5	6	7
: is unwilling to accept responsibility	1	2	3	4	5	6	7
: provides false information	1	2	3	4	5	6	7
: fails to provide proper notification of a problem	1	2	3	4	5	6	7

3.2 Monitoring & Auditing

Please indicate the extent to which the following is true for your firm. Our firm: (Please think of your important supplier from an emerging economy while answering these questions)

	Not at all		Moderate			To a great extent	
: uses 3rd party services to ensure that our supplier adheres to our social expectations	1	2	3	4	5	6	7
: has specific audit procedures aimed at supplier’s compliance to our social expectations	1	2	3	4	5	6	7
: conducts periodic visits to our supplier’s facilities to ensure compliance with our supplier code of conduct	1	2	3	4	5	6	7
: monitors our supplier operations to ensure adherence to our social expectations	1	2	3	4	5	6	7

3.3 Contract Selection Practices

For the following question, there are no wrong or right answers, as a variety of approaches are commonly used. What is your firm’s position on the following activities, when considering their frequency of occurrence? In general, our firm: (please circle a number for each item)

	Not at all		Moderate			To a great extent	
: writes specifications that favor a particular supplier	1	2	3	4	5	6	7
: gives preference to suppliers preferred by top management	1	2	3	4	5	6	7
: considers personalities of suppliers during contract negotiations	1	2	3	4	5	6	7
: shares information about suppliers with their competitors	1	2	3	4	5	6	7

3.4 Social Practices

Please indicate the extent to which the following practices are adopted by your firm. Our firm asks our supplier to: (Please think of your important supplier from an emerging economy while answering these questions)

	Not at all		Moderate			To a great extent	
: maintain overtime wage records	1	2	3	4	5	6	7
: ensure its compensation system is aligned with the minimum wage set by its country’s labor laws	1	2	3	4	5	6	7
: ensure that its employees understand their wage structure as indicated on their wage slips and / or payroll records	1	2	3	4	5	6	7

: provide evidence of complying with local / national laws on use of under-age workers	1	2	3	4	5	6	7
: maintain records of under-age workers hired under apprenticeship programs	1	2	3	4	5	6	7
: maintain documentary evidence for proof of age upon recruitment of new employees (such as copies of birth certificates or any other government issued identification documents)	1	2	3	4	5	6	7
: ensure that its employees are not asked to deposit money, to be returned to them upon completion of a fixed employment period	1	2	3	4	5	6	7
: provide evidence that a comprehensive occupational safety & health (OSH) management system exists	1	2	3	4	5	6	7
: provide evidence that management at all levels can explain their responsibilities with regard to the company's OSH program	1	2	3	4	5	6	7
: provide evidence that all OSH related documentation and records are complete	1	2	3	4	5	6	7
: provide evidence that a mechanism exists to encourage input from workers on OSH issues	1	2	3	4	5	6	7

4. COLLABORATION

4.1 Customer Collaboration

Collaboration with customers refers to combined efforts of your firm, and your major customers to develop a socially responsible supply chain.

Please indicate the extent to which the following practices are adopted by your firm. Our firm and its major customers: (please circle a number for each item)

	Not at all		Moderate			To a great extent	
: jointly search for new initiatives to develop a socially responsible supply chain	1	2	3	4	5	6	7
: jointly acquire relevant knowledge to develop a socially responsible supply chain	1	2	3	4	5	6	7
: jointly identify potential social issues in our supply chain	1	2	3	4	5	6	7
: provide constructive input to each other on a broad range of supply chain related social issues	1	2	3	4	5	6	7
: collaborate with each other to develop a socially responsible supply chain	1	2	3	4	5	6	7

4.2 NGO Engagement

Some firms collaborate with various non-governmental organizations (NGOs), such as Fairtrade, Rainforest Alliance, WWF, UNICEF, among others. For example, NGOs can educate and offer a different perspective, facilitate data collection, assist with analysis, or provide some form of certification.

Please indicate the extent to which the following practices are adopted by your firm. Our firm: (please circle a number for each item)

	Not at all		Moderate			To a great extent	
: works to build relationships with various NGOs through several mechanisms, such as informal meetings, advisory panels, or working groups	1	2	3	4	5	6	7
: interacts with various NGOs on a regular basis to understand emerging social issues	1	2	3	4	5	6	7
: participates in activities arranged by NGOs on creating awareness of social issues in supply chains	1	2	3	4	5	6	7
: shares its efforts for development of a socially responsible supply chain with various NGOs	1	2	3	4	5	6	7
: identifies potential social issues in our supply chain in collaboration with NGOs	1	2	3	4	5	6	7

4.3 Community Development

In the next set of questions, Community refers to the local population residing near the supplier's facility chosen by you.

Please indicate the degree to which the following practices are adopted by your firm. Our firm: (please circle a number for each item)

	Not at all		Moderate			To a great extent	
: asks our supplier to participate in activities aimed at local community development	1	2	3	4	5	6	7
: collaborates with our supplier on community development projects in the supplier's local community	1	2	3	4	5	6	7
: works to build relationship with supplier's local community through such activities as community advisory panels or local resident surveys	1	2	3	4	5	6	7
: works with our supplier to assess the impact of supplier operations on the local community	1	2	3	4	5	6	7
: identifies potential risks of the supplier for the local community from an economic, health and safety, and environmental perspective	1	2	3	4	5	6	7

4.4 Supply Chain Practices

Listed below are supply chain management practices that may affect firms' ability to compete in an industry. Please indicate your level of agreement with these statements about your firm's supply chain practices over the last two years. (please circle a number for each item)

	Not at all		Moderate			To a great extent	
In order to stay competitive, our supply chain managers focus on reducing operational redundancies in our existing processes	1	2	3	4	5	6	7
Leveraging of our current supply chain technologies is important to our firm's strategy	1	2	3	4	5	6	7
In order to stay competitive, our supply chain managers focus on improving our existing technologies	1	2	3	4	5	6	7
Our managers focus on developing stronger competencies in our existing supply chain processes	1	2	3	4	5	6	7
Our firm proactively pursues new supply chain solutions	1	2	3	4	5	6	7
Our firm continually experiments to find new solutions that will improve our supply chain	1	2	3	4	5	6	7
To improve our supply chain, our firm continually explores for new opportunities	1	2	3	4	5	6	7
Our firm is constantly seeking novel approaches in order to solve supply chain problems	1	2	3	4	5	6	7

4.5 Operations Collaboration

Please indicate the extent to which your firm does the following operational improvement activities with its major suppliers. Our firm: (please circle a number for each item)

	Not at all		Moderate			To a great extent	
: effectively shares operational information externally with selected suppliers	1	2	3	4	5	6	7
: has developed performance measures that extend across supply chain relationships	1	2	3	4	5	6	7
: has arrangements with suppliers that operate under principles of shared rewards and risks	1	2	3	4	5	6	7
: benchmarks best practices/processes and shares results with suppliers	1	2	3	4	5	6	7
: shares real-time information on processes with suppliers	1	2	3	4	5	6	7
: engages in collaborative planning with suppliers	1	2	3	4	5	6	7

5. PERFORMANCE

5.1 Supplier's Social Performance

For each of the items listed below, how would rate your supplier's performance in the last two years. (Please think of your important supplier from an emerging economy while answering these questions)

	Much Worse		About the Same			Much Better	
Supplier's improvement of its occupational safety & health (OSH) system	1	2	3	4	5	6	7
Supplier's improvement in bringing transparency to its payroll system	1	2	3	4	5	6	7
Supplier's improvement towards meeting minimum-age requirements for hiring workers	1	2	3	4	5	6	7
Supplier's improvement in complying with our firm's supplier code of conduct	1	2	3	4	5	6	7
Supplier's collaborative efforts with our firm to develop a socially responsible supply chain	1	2	3	4	5	6	7

5.2 Your firm's Social Performance

For each of the items listed below, how would rate your firm's performance in the last two years. (please circle a number for each item)

	Much Worse		About the Same			Much Better	
Ensuring adherence to our firm's supplier code of conduct by tier-1 suppliers	1	2	3	4	5	6	7
Screening suppliers for potential social concerns during contract negotiations	1	2	3	4	5	6	7
Conducting site audits of tier-1 suppliers for code of conduct conformance	1	2	3	4	5	6	7
Expanding the list of social performance metrics for suppliers	1	2	3	4	5	6	7
Setting stringent targets for social performance of suppliers	1	2	3	4	5	6	7

5.3 Operations Performance

For each of the items listed below, how does the performance of your firm compare with its primary competitors? (please circle a number for each item)

	Relatively weak		Moderate			Market leader	
performance quality (i.e., a product's primary operating characteristics)	1	2	3	4	5	6	7
conformance quality (i.e., the degree to which a product's operating characteristics meet established standards)	1	2	3	4	5	6	7
product reliability (i.e., the probability of a product failing within a specified time period)	1	2	3	4	5	6	7
being able to provide fast-response deliveries from order to end customer	1	2	3	4	5	6	7
order fulfillment lead time	1	2	3	4	5	6	7
delivery lead time	1	2	3	4	5	6	7
ability to rapidly change production volumes	1	2	3	4	5	6	7
manufacture broad product mix within same facilities	1	2	3	4	5	6	7
ability to rapidly modify methods for components	1	2	3	4	5	6	7
profit margin (%)	1	2	3	4	5	6	7
return on sales (ROS) (%)	1	2	3	4	5	6	7
return on total assets (ROA) (%)	1	2	3	4	5	6	7

6. FIRM & RESPONDENT CHARACTERISTICS

The information in this section of the survey provides us with general background to study relationships between respondents and their firm's characteristics and supply chain practices.

6.1 Firm

1. Annual sales for 2014 (or latest fiscal year) in U.S. dollars?	Less than \$200 million	\$200 million to \$500 million	\$500 million to \$1 billion	\$1 billion to \$5 billion	More than \$5 billion
2. How many employees work for your firm	Less than 100	Between 100 – 1,000	Between 1,000 – 5,000	Between 5,000 – 10,000	More than 10,000

6.2 Respondent

3. What is your title or general position?	Vice President	General Manager	Director	Manager	Other
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4. How many years of total experience do you have? _____

5. How long have you been with your current firm? _____

6. How knowledgeable did you feel answering this questionnaire?

Not knowledgeable		Average		Very knowledgeable	
1	2	3	4	5	
1	2	3	4	5	

7. How knowledgeable are you about purchasing / supply chain issues within your organization?

8. How often do you interact or deal with issues related to overseas suppliers of your firm?

Not at all		Moderate		To a great extent	
1	2	3	4	5	

9. Are there any important issues related to social practices that you feel have been left out in this survey? If so, please comment here or on a separate sheet.

Thank you for completing the questionnaire.



Appendix D: Ethics Approval Form



Research Ethics

Western University Health Science Research Ethics Board NMREB Delegated Initial Approval Notice

Principal Investigator: Dr. Robert Klassen
Department & Institution: Richard Ivey School of Business, Western University

NMREB File Number: 105888
Study Title: Managing Supplier Relations in Emerging Markets
Sponsor: Ivey Research Fund

NMREB Initial Approval Date: November 27, 2014
NMREB Expiry Date: April 30, 2015

Documents Approved and/or Received for Information:

Document Name	Comments	Version Date
Instruments	This file contains the link to the online survey hosted on Qualtrics website.	2014/10/01
Letter of Information & Consent		2014/11/27
Western University Protocol	Clean copy of revised protocol	2014/10/26
Instruments	This file has the paper-based questionnaire.	2014/10/02

The Western University Non-Medical Research Ethics Board (NMREB) has reviewed and approved the above named study, as of the NMREB Initial Approval Date noted above.

NMREB approval for this study remains valid until the NMREB Expiry Date noted above, conditional to timely submission and acceptance of NMREB Continuing Ethics Review.

The Western University NMREB operates in compliance with the Tri-Council Policy Statement Ethical Conduct for Research Involving Humans (TCPS2), the Ontario Personal Health Information Protection Act (PHIPA, 2004), and the applicable laws and regulations of Ontario.

Members of the NMREB who are named as Investigators in research studies do not participate in discussions related to, nor vote on such studies when they are presented to the REB.

The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

[Redacted Signature]

Ethics Officer, on behalf of Riley Hinson, NMREB Chair

Ethics Officer to Contact for Further Information

Erika Basile	Grace Kelly	Mina Mekhail	 Vikki Tran
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This is an official document. Please retain the original in your files.

Western University, Research, Support Services Bldg., Rm. 5150
London, ON, Canada N6A 3K7 t. 519.661.3036 f. 519.850.2466 www.uwo.ca/research/services/ethics

Appendix E: Curriculum Vitae

ASAD SHAFIQ

Ivey Business School
Western University
1255 Western Road
London, Ontario, N6G 0N1
Canada



EDUCATION

Ivey Business School, Western University (formerly University of Western Ontario) , London, ON, Canada PhD (ABD), Operations Management Dissertation: <i>Supplier social engagement and its impact on alignment of social practices and performance in supply chains</i> Committee: Robert Klassen, Fraser Johnson, Lyn Purdy, Stephan Vachon.	Expected 2015
Lahore University of Management Sciences , Lahore, Pakistan Master of Business Administration	May 2007
GIK Institute of Engineering Sciences & Technology , Topi, Pakistan B.S. Mechanical Engineering	May 2001

RESEARCH INTERESTS

Sustainable supply chains, socially responsible operations, buyer-supplier relationships

PUBLICATIONS

Shafiq, A., Awaysheh, A., Klassen, R. D., & Johnson, P. F. (2014). Socially Responsible Practices: An Exploratory Study on Scale Development using Stakeholder Theory. *Decision Sciences*, 45(4), 683–716.

Johnson, P. F., **Shafiq, A.**, Awaysheh, A., & Leenders, M.R. (2014). Supply organizations in North America: A 24 year perspective on roles and responsibilities 1987–2011. *Journal of Purchasing and Supply Management*, 20(2), 130–141.

ADVANCED MANUSCRIPTS

Shafiq, A., Johnson, P. F., Klassen, R. D., Awaysheh, A., The impact of supply risk on sustainability monitoring practices. (*Advanced manuscript under preparation for submission to Journal of Operations Management*)

Johnson, P. F., **Shafiq, A.**, Leenders, M.R., Effect of global purchasing on suppliers socially responsible practices and performance. (*Advanced manuscript under preparation for submission to Journal of Supply Chain Management*)

RESEARCH IN PROGRESS

Shafiq, A., Ahmed, M.U., The effect of buyer's engagement strategy on supplier's sustainability performance. (*Data Analysis Stage*)

Awaysheh, A., **Shafiq, A.**, Klassen, R. D., Johnson, P. F., The effect of supply chain structure on buyer's ethical practices. (*Data Analysis Stage*)

CONFERENCE PROCEEDINGS & PRESENTATIONS

Awaysheh, A., **Shafiq, A.**, Klassen, R. D., Johnson, P. F., The effect of supply chain structure on buyer's ethical practices. ASAC 35th Annual Meeting. May 2014. Muskoka, ON.

Johnson, P.F., **Shafiq, A.**, Awaysheh, A. and Leenders, M.R., The impact of global sourcing on socially responsible practices of firms, IPSERA 23rd Annual Conference, April 2014. South Africa. (Best Paper Award)

Shafiq, A., Analysing Supply Networks: A social networks perspective. ASAC 34th Annual Conference. June 2013. Calgary, AB.

Shafiq, A., Johnson, P. F, Klassen, R. D., Supplier Involvement in New product development: Impact of risk on performance. Decision Sciences Institute 44th Annual Meeting. November 2013. Baltimore, MD.

Johnson, P. F., **Shafiq, A.**, Awaysheh, A., Leenders, M.R., Supply organizations in North America: A twenty-four year perspective on roles and responsibilities 1987-2011. IPSERA 22nd Annual Conference. March 2013. Nantes, France.

Shafiq, A., Awaysheh, A., Klassen, R. D., Johnson, P. F., Socially responsible practices: An exploratory study on scale development using stakeholder theory. Decision Sciences Institute 43rd Annual Meeting. November 2012. San Francisco, CA.

Awaysheh, A., **Shafiq, A.**, Klassen, R. D., Johnson, P. F., The effect of Supply Chain Structure on buyer's ethical practices. Decision Sciences Institute 42nd Annual Meeting. November 2011. Boston, MA.

TEACHING INTERESTS

Operations management, supply chain management, sustainability, statistics, spreadsheet modeling, project management, and business analytics/data mining.

TEACHING EXPERIENCE

Instructor, Operations Management (Undergraduate Core), Intersession 2014, Odette School of Business, University of Windsor. Official Teaching Evaluation: **5.9/7.0**, Enrollment: 46.

Guest Lecturer, Structural Equation Modelling (PhD Course): SEM Application using AMOS

Teaching Assistant, Ivey Business School, Western University, ON. 2010 – Present

- Undergraduate courses: Decision Making with Analytics, Sports and Entertainment Analytics
- MS/MBA level courses: Operations Management, Decision Making with Analytics (02 times), Marketing Strategy

CASES

"Building Sustainable Distribution at Walmart Canada," [with Johnson and Klassen] 2013, Ivey Publishing 9B13D010 and teaching note Ivey Publishing 8B13D010.

ACADEMIC SERVICE

Ad Hoc Reviewer:

- ASAC Conference 2013, 2014
- Academy of Management Conference 2013

INDUSTRY EXPERIENCE

Alghanim Industries

Kuwait

Logistics Manager (Supply Chain)

2007 - 2010

- Managed a team of 200+ people working across multiple warehouses and a distribution centre
- Project coordinator for SAP implementation across Alghanim's Supply Chain resulting in 10% reduction in manpower and annual savings of 450,000USD
- Set up 'Activity Based Costing' system for supply chain to replace the cost charge-back method; providing visibility into costs and significant savings
- Developed 'Service Level Agreements' with retail units outlining KPIs, processes and detailed requirements from suppliers & customers

Unilever Pakistan

Pakistan

Operations Manager (Ice-Cream)

2002 - 2005

- Managed a team of 90 people to ensure uninterrupted, low cost production operations
- Lead Project Engineer for 7 million USD capacity expansion project
- Created organizational cohesiveness by revitalizing Plant's small group activity and implemented New Kaizen Protocol
- Set up the Occupational Health & Safety Management System for ISO 18001 certification

Advanced Engineering Research Organization

Pakistan

Design Engineer

2001 - 2002

PROFESSIONAL COURSES

Lean Six Sigma Green Belt Certification, George Group, Kuwait

TPM Instructor's Course, Japan Institute of Plant Maintenance, Pakistan

Ice-cream Foundation Course, Unilever Global Technology Centre, Thailand

Industrial Safety Course, Unilever Engineering Excellence Team, Thailand

Occupational Health & Safety Management Systems, Bureau Veritas Company, Pakistan

HONORS, SCHOLARSHIPS

Plan of Excellence Doctoral Fellowship, Ivey School of Business (2010 - 2014)

MBA Merit Scholar, LUMS Business School

President of Supply Chain Club, LUMS Business School

Dean Honour List Graduate, GIKI of Engineering Sciences & Technology

DOCTORAL COURSE WORK

Operations Management I: Dina Ribbink

Operations Management II: Yoon Hee Kim

Univariate Analysis: Chris Higgins

Multivariate Analysis: Chris Higgins

Structural Equation Modelling: Brad Corbett

Foundations of Management Teaching: Deborah Compeau

Foundations of Management Thought: Rod White

Research Methodology: Matt Thomson

Decision Making with Analytics: Fredrik Odegaard

Advanced Multivariate Analysis: Rachel Margolis

Cross-Disciplinary Research: Mark Zbaracki

Regression Analysis for Panel Data: Richard A. Wanner