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Enhancing supply chain performance through supplier social sustainability: An emerging economy perspective

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ABSTRACT

Sustainability is gaining interest among academics and practitioners due to increased stakeholder awareness of environmental and social issues. However, relatively little research has been conducted on the extent to which firms have integrated social sustainability aspects into the management of their supply chains in emerging economies. The purpose of this article is to explore the social issues pertinent to suppliers and to identify measures and dimensions related to social sustainability in emerging economies. Further, it explores the benefits suppliers and buyers gain by effectively managing such social issues. For this purpose, first, in-depth interviews were conducted with 27 supply chain managers. Further, a survey was conducted in Indian manufacturing industries and co-variance-based structural equation modeling was used to test the hypothesized model. The findings reveal that there are 18 validated supplier social sustainability measures underlying five social dimensions: labor rights, safety and health, societal responsibility, diversity, and product responsibility. The results also suggest a positive relationship between supplier social sustainability practices and supply chain performance mediated by supplier performance. In addition, the role of the buyer's commitment and investment moderates both suppliers and supply chain performance. These results are relevant because they not only identify the social issues plaguing supply chains in emerging economies, but also have practical implications for organizations trying to build socially sustainable supply chains for competitive advantage.

1. Introduction

Sustainability is gaining popularity in supply chain research, due to increased awareness among stakeholders of corporate actions on the environment and society. More recently, firms increasingly extend their supplier base to emerging economies because of cost advantage. On the other hand, a supplier's performance plays a key role in the focal company's long-term performance (Carter, 2005). As the firm extends its supplier base to the emerging economies, the supplier's actions put the focal company's supply chain at greater risk (Klassen and Vereecke, 2012). Suppliers' actions are in the form of social issues related to product and process aspects, which affect the people and society surrounding these locations (Wood, 1991; Tate et al., 2010; Mani et al., 2016a). The supply chain needs to confront its operational risk because of such social issues (Klassen and Vereecke, 2012). Ageron et al. (2012) emphasizes the importance of upstream supply chain design that not only affect the focal

company but impact the whole supply chain especially when the enterprise operations are based on strategic alliances. However, this research has not specified the social responsibility criteria's or parameters that can be used for measuring sustainability in upstream supply chain and recommend for future research on sustainability measures.

In the literature, issues related to product safety have received much attention, with research spanning several decades (Marcus and Goodman, 1991; Maloni and Brown, 2006). Further, researchers proved that improving labor working conditions in the suppliers' locations results in accident reduction and incremental lead time, improving the operational performance of the buying firm (Freire and Alarcón, 2002; Yuan and Woodman, 2010). Recently, others explored issues such as faulty automobile design, dangerous chemicals in children's toys, and food contamination in different supply chains (Roth et al., 2008). The firms caught up in such scandals faced severe consumer backlash, product recalls, fines, and loss of market share. On the other hand,

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Fombrun et al. (2000) argue that firms invest in corporate social responsibility (CSR) and sustainability efforts to build reputation capital (and avoid reputation risk). However, the negative outcomes arising out of social issues are not limited only to the firm directly involved, but extend to the parent company and the market (Cruz and Wakolbinger, 2008). Recently, firms are held responsible by their stakeholders for unethical behavior in their supply chains (Park-Poaps and Rees, 2010).

Others argue that supplier social sustainability adoption not only improves social performance but can contribute to the competitive advantage of the whole supply chain, which, in turn, reduces costs and increases market share (Klassen and Vereecke, 2012; Rao and Holt, 2005). Further, the improvement of working conditions in suppliers' companies benefits the buyers' operational performance in the form of accident reduction, fewer disruptions, and increases in product delivery time (Freire and Alarcón, 2002; Yuan and Woodman, 2010). According to Pagell et al. (2010), better working conditions for employees results in improved product quality, due to the employees' enhanced motivation. In a way social sustainability adoption in the supply chain is paramount important to production economies as it results in reduced health and safety cost, lower labor cost, better product quality and shorter lead-times and enhanced reputation (Carter and Rogers, 2008).

Further, scholars building on resource dependency view (RDT) argue that a firm's systematic sustained approach to risk management provides sustainable benefits to all supply chain partners and competitive advantage over others. They further advocate that the implementation of supplier integration, evaluation, and collaboration efforts on sustainability presents opportunities in developing core resource capabilities that in turn lead to competitive advantage for firms (Foerstl et al., 2010). To summarize, until now, research on social sustainability first talked about suppliers' social issues and their impact on the focal company's performance. At the same time, better management of social issues results in risk reduction for the focal company's supply chain, and finally, supplier development, integration, and collaboration toward social sustainability contribute to buyers' strategic advantage.

However, until now, studies on supply chain social sustainability in majority were conducted in Western countries as discussed (Europe and Northern America), indicating a predominantly Western perspective of social issues in supply chains (Yawar and Seuring, 2015; Sancha et al., 2015). Although, there were studies in emerging economies, for instance, Gopalakrishnan et al. (2012) through BAE case identify social issues in emerging economies including ethical code of conduct (honesty, integrity, openness), diversity and inclusion, safety and environmental performance and Hall et al. (2012) through Brazilian oil and gas supply chain using qualitative data (case based) point out social issues such as poverty alleviation, health and educational efforts. Similar research by Silvestre (2015b) discusses health, fresh water, sanitation, power supply and alcohol abuse as social issues and how institutional complexities act as barriers to sustainability adoption. Other discusses safe water, food, healthcare and education (Sodhi and Tang, 2011) and child and forced labor, minimum wages, freedom to associate, health and safety (Lee and Lee, 2007) in emerging economy suppliers. All of these were using qualitative and case based approaches except a study by Zailani et al. (2012) that involved survey based research with 400 manufacturing firms in Malaysia through which the linkage between sustainable purchasing and supply chain performance (Social, environmental) was established.

While there is an apparent increase in the attention given to the supply chain social sustainability, many scholars further argue that the studies on the Asian perspective were limited or scant (Gugler and Shi, 2009). This is a biased approach in understanding and addressing social issues in the supply chain when many of the extended stakeholders are operating out of emerging economies. In the supply chain literature, the use of social indicators for measuring social and financial performance was hardly done, especially with respect to supply chain context (Torugsa et al., 2013; Hutchins and Sutherland, 2008), and needs further research. Social issues are contextual and dynamic based on the societal evolution

of a particular country. Further, Yawar and Seuring (2015) argue that scholars and practitioners should embrace contextual, time-dependent, dynamic, and emerging social issues as social indicators in measuring supply chain performance. Based on the above discussions, we believe that social issues greatly differ among different stakeholders because they change and are dependent on the environment in which the firm operates (Clarkson, 1995; Hoejmose et al., 2013).

This study explores three primary research questions: what are supply chain social sustainability issues pertain to upstream supply chain in emerging economies; and by addressing such social issues what are possible benefits can be achieved by focal firms? Whether or these performance benefits driven by commitment and investment of focal company? Drawing on field data from Indian manufacturing industry, this study better defines the social issues and the benefits gained by addressing such issues in upstream supply chain. Therefore, our contributions are threefold. First, we explore the supplier social sustainability issues and identify measures and dimensions pertinent to emerging economies. Second, we explore the possible performance benefits of effectively managing such issues to suppliers' performance and buyers' supply chain performance, moderated by commitment and collaboration practices. Third, by integrating prior theory with our field data, we derived research conclusions to guide future research in other emerging markets. The remaining sections are organized as follows. Section 2 describes the available literature on sustainability, social sustainability and supply chain management, and theoretical background. Section 3 discusses the hypothesis development. Section 4 presents the steps involved in research design. Section 5 describes the analysis, followed by discussions in section 6. Finally, section 7 lays down implications and conclusion.

2. Review of literature

2.1. Sustainability and supply chain management

Corporate sustainability can be traced from the seminal work of Carroll (1979), which describes a firm's four primary responsibilities: economic, legal, ethical, and voluntary. Businesses are in a central position with respect to promoting sustainability and being responsible for the societal impact that arises from their actions (economic, environmental, and social) (Elkington, 1998). The impact of corporate actions not only affects a standalone company and its society, but the whole supply chain, which extends to multiple continents (Rao and Holt, 2005). Inevitably, supply chain sustainability has been gaining momentum in the academic literature (Seuring and Müller, 2008; Carter and Rogers, 2008; Carter and Liane Easton, 2011). Supply chain sustainability refers to the "management of material, capital, and information flows as well as cooperation among the firms along the supply chain while taking goals from all three dimensions of sustainable development, which are derived from customers' and stakeholders' requirements" (Seuring and Müller, 2008). However, a widely accepted definition for sustainability was proposed by Brundland Commission (1987), which describes meeting today's needs of the people without compromising the future needs of the generations to come.

Dyllick and Hockerts (2002) further transposed this definition as "meeting the needs of the firm's direct and indirect stakeholders (shareholders, employees, clients, pressure groups, communities, etc.), without compromising its ability to meet the needs of the future stakeholders as well." In the literature, the terms sustainability and corporate social responsibility have been used interchangeably as both disciplines started converging together in the recent past (van Marrewijk, 2003). Scholars argue that the pervasive use of the term CSR, which captures the general obligations and duties of an organization to society, adds further confusion (Vogel, 2005). On the other hand, CSR typically encompasses predominantly environmental and social issues as components of the triple bottom line (Elkington, 1998). In sustainability literature, environmental and green aspects were over emphasized, and less importance

was given to the social dimension because of the complexity involved in measuring social issues (Yawar and Seuring, 2015; Ashby et al., 2012; Gugler and Shi, 2009).

2.2. Social sustainability in the supply chain

In the supply chain literature, social sustainability has been so far used predominantly as a mere extension of corporate social responsibility (Hutchins and Sutherland, 2008), in how the companies display socially responsible behavior in purchasing decisions. For example, Carter and Jennings (2004), through purchasing social responsibility (PSR), and Murphy and Poist (2002), through logistical social responsibility (LSR), identify social issues and their relationship on supply chain performance in a standalone fashion. According to Hutchins and Sutherland (2008), CSR and social responsibility have been used interchangeably to describe corporate sustainability (van Marrewijk, 2003). However, there has been considerable debate on what constitutes social sustainability in the supply chain (van Marrewijk, 2003; Awaysheh and Klassen, 2010; Gimenez and Tachizawa, 2012). To understand better, one needs to explore three questions: Who is being targeted? What issues are being addressed? How are they addressed? (Wood, 1991). Thus, social sustainability originates from the direct or oblique duty that decision-makers have to deal with particular social issues and business decisions or outcomes in the supply chain (New, 2004). Others describe social sustainability as an “ethical code of conduct for human survival and outgrowth that needs to be accomplished in a mutually inclusive and prudent way” (Lafferty and Langhelle, 1999). Moreover, according to some scholars, social sustainability is concerned with the management of social resources that include people’s skills and abilities, relationships, and social values (Sarkis et al., 2010).

In operations in particular, socially sustainable practices can be defined as the product and process aspects that determine human safety, welfare, and wellness (Wood, 1991). Further, building on social sustainability, Mani et al. (2016a, b) refined the social sustainability phenomenon as supply chain social sustainability (SCSS), with six distinguished dimensions: equity, philanthropy, safety and health, human rights, child and forced labor, and product responsibility. Further, they argue that social sustainability in the supply chain deals with product and process issues that cause long-term impacts on the people, in particular, stakeholders involved in upstream and downstream supply chains in emerging economies (Mani et al., 2016b). Social issues in the supply chain mainly deal with the inter-firm level (i.e., supplier issues), the intra-firm level (i.e., issues in own manufacturing), and customers. While the inter-firm level can be managed by the focal company, supplier issues put the company at risk (Klassen and Vereecke, 2012).

Most research in supply chain management has focused on internal or external disruptions and failures caused by negative events that, in turn, led to risk (Kleindorfer and Saad, 2005). Quantitatively, risk can be defined as the probability of the event occurring multiplied by the financial loss (severity). The risk has multiple dimensions in operations and supply chain management: more specifically, risk related to process technology, product development, demand fulfillment, and consumer safety (Lewis, 2003; Zsidisin, 2003). Managing the social issues that are integral parts of the product and process environment is inevitable. Clearly, the firm that chooses to ignore social issues in the supply chain has a high chance of being held accountable, depending on the firm’s size and marketplace (Zadek, 2004; Klassen and Vereecke, 2012). As a result, firms face severe backlash from consumers, loss of market share, and fines.

2.3. Supply chain social sustainability in emerging economies

In addition, in developing countries, labor practices of global companies (and their suppliers) have gained much attention due to stakeholder pressures (NGOs, media, and customers). Huq et al. (2016) through their case study research in Bangladesh’s apparel industry

explored various social management capabilities and drivers for social sustainability adoption. Their research identified suppliers social issues including health, safety (worker wellness, working conditions, occupational diseases, fatalities and emergency preparedness), quality of life for workers (stress, overtime, working hours, minimum wages, job satisfaction), worker rights (forced labor, freedom of association, humane treatment, paid maternity and sick leave in suppliers). Further their research found that in the absence of effective stakeholder’s pressure and ineffective regulatory mechanisms force buyers to replace themselves to act as regulators for supplier’s social issues. Similar study conducted by Gopalakrishnan et al. (2012) through BAe found various other social issues such as ethical code of conduct, inclusion and diversity, safety and environmental performance in India’s suppliers. Others identify country specific social issues, for instance poverty alleviation, health and safety, educational efforts (Hall et al., 2012) and fresh water, sanitation, power supply, and alcohol abuse (Silvestre, 2015b) in Brazilian oil and gas industries. Silvestre also points out the institutional complexities that act as barrier to supply chain social sustainability adoption.

Sodhi and Tang (2011) in their research on social sustainability through social enterprises discuss issues including safe water, food, healthcare and education in major emerging economies (India, Africa, Bangladesh, Philippines, Sri Lanka, Nepal and Mexico). Similar case study was conducted on star buck’s flagship initiative popularly known as coffee and farmer’s equity (CAFÉ), through their suppliers and identified various sustainability practices that include child and forced labor, minimum wages, freedom to associate, health and safety (Lee and Lee, 2007). Of the studies discussed, the social issues vary from country to country even among emerging economies as the social norms differ considerably (Hoejmose et al., 2013) and contextual, time-dependant, dynamic and emerging (Yawar and Seuring, 2015). Further, studies in majority used qualitative and case based approaches, except a study by Zailani et al. (2012) that involved survey based research with 400 manufacturing firms in Malaysia through which the linkage between sustainable purchasing and supply chain performance (Social, environmental) was established.

2.4. Theoretical background

In the supply chain management and sustainability literature, increasingly, many theories are proposed (Carter and Liane Easton, 2011). However, not only do scholars argue of the slow adaptation of these theories into sustainable supply chain management (SSCM) (Seuring and Müller, 2008; Carter and Rogers, 2008), but the effort to introduce such theories into SSCM is still in its infancy (Gold et al., 2010). Therefore, SSCM literature draws upon many theories from various disciplines. Sarkis et al. (2011) and Morali and Searcy (2013) identify various theories in sustainable supply chain management, including resource-based view theory (RBV), resource dependence theory (RDT), institution theory, and stakeholder’s theory. Building on such theories, Font et al. (2008) assert that firms must engage with upstream producers and downstream customers to ascertain that every product they manufacture is sustainable. Klassen and Vereecke (2012), building on resource dependence view (RDV), demonstrate how organizations foster the development of internal and external coalitions to acquire control over the resources that minimize their dependence and over resources that maximize the dependence of other organizations on themselves (Pfeffer and Salancik, 1978; Ulrich and Barney, 1984). They further assert that such collaborative efforts in addressing social issues not only mitigate supply chain risk, but also create sustainable advantage for the buying firm (Klassen and Vereecke, 2012).

Further, scholars building on resource-based view theory, such as Carter and Jennings (2004) through PSR and Sodhi (2015) through stakeholder resource-based view (SRBV), demonstrated the importance of building and harvesting stakeholders’ resources for competitive advantage of the focal firm (Mani et al., 2016a). According to resource-based view (Barney, 1991), collaboration between buyer and

supplier enables the partnering firm to build set of rare, inimitable, and valuable resources that lead to competitive advantage. As with Carter and Jennings (2004), we agree such collaborations bring valuable and intangible resources, such as human resources and the learning that occurs while working together to improve sustainability.

Further, stakeholder's view (SV) (Freeman, 1994) suggests that stakeholders are the agents of social change, as they possess different forms of power and press for addressing social issues in the supply chain, which invariably leads to sustainable performance of the organization (Maignan et al., 2002). Waddock et al. (2002) found that by addressing social issues, organizations meet internal and external stakeholders' expectations and reach certain social and economic performance. Others found that, by addressing social issues in the supply chain, they gain legitimacy and reputation among stakeholders (Branco and Rodrigues, 2008).

On the other hand, literature on resource dependence view in relation to the supply chain discipline provides valuable insights into how the focal companies (buyers) manage their reliance on suppliers for their materials and services (Chu and Wang, 2012; Hillman et al., 2009). RDT also proposes how the focal company can minimize its dependence on other organizations and maximize the dependence of the other organizations on themselves (Ulrich and Barney, 1984). Further building on RBT, Schnittfeld and Busch (2016) demonstrate inter-organizational sustainability management, which refers to a firm's ability to confer its own sustainability management to external partners. We build our research based on RBV, SRBV, and RDT theories to demonstrate the social issues in the upstream supply chain and their impact on focal firms' supply chain performance (Fig. 1).

3. Hypothesis development

Building on resource-based view (RBV), Carter and Jennings (2004) identify diversity issues related to suppliers and how such resources impact the supply chain performance. Although they could not find a direct relationship between social issues and supply chain performance, they found an indirect relationship mediated by learning and trust. According to stakeholder's perspective (Freeman, 1994), scholars advocate that adopting gender non-discrimination and promoting marginalized communities in the supplier locations help firms achieve better social performance (Yakovleva et al., 2012; Prieto-Carron, 2008; Hutchins and Sutherland, 2008). Stakeholder's perspective further emphasizes stakeholders' role in preventing reputational loss and improving performance through CSR and stakeholders collaboration (Lee and Kim, 2009).

However, Chin and Tat (2015) found no relationship between gender diversity practices and supply chain performance. As the literature gives mixed results regarding diversity practices, and due to scholars' insistence on future investigations (Burchielli et al., 2009; Yawar and Seuring, 2015), we propose:

H1. *In developing nations, issues related to supplier diversity practices constitute a dimension of supplier social sustainability (SUSS).*

Safety and health at supplier locations include the physical and mental health conditions of the employees, which affect wellness (Yawar and Seuring, 2015). Scholars assert both internal and external stakeholders (Freeman, 1994) identify health and safety of employees as important social issues. They further argue that the repercussions of unhealthy and unsafe working conditions may create difficulty in attracting and retaining employees, which may affect the long-term performance of the organization (Torugsa et al., 2013). The changes in business practices such as just in time (JIT) and lead time reduction by global firms may lead to significant impacts on the safety and health of employees (Welford and Frost, 2006). Linking to the resource-based view of Carter and Jennings (2004), Mani et al. (2016b) found supplier social issues and how addressing such issues in the supply chain impacts the overall supply chain performance. Tate et al. (2010), building on legitimacy theory, have proven how corporations can increase their legitimacy by publishing CSR reports on the mitigation of safety and health issues in the supply chain. However, safety and health issues amount to a majority in the literature and vary between developed and developing countries, and need further investigation (Yawar and Seuring, 2015). We formulate our next hypothesis as:

H2. *In developing nations, issues related to safety and health constitute a dimension of supplier social sustainability (SUSS) in the supply chain.*

Labor issues are an integral part of social sustainability. Addressing such issues properly can enhance the performance of the supply chain (Mani et al., 2016a). Further, building on stakeholder's view, Nishant et al. (2016) found that properly addressing labor issues at the workplace helps in the retention of skilled labor and building positive perception among internal and external stakeholders. Others, such as Chardine-Baumann and Botta-Genoulaz (2014), Labuschagne et al. (2005), and Carter and Jennings (2004), have identified labor rights (supplier's), labor working conditions (supplier's), and child and forced labor in the supply chain and their relationship on focal company's performance. Furthermore, improvement of employee's working conditions on the supplier's premises results in direct reduction of accidents, fewer

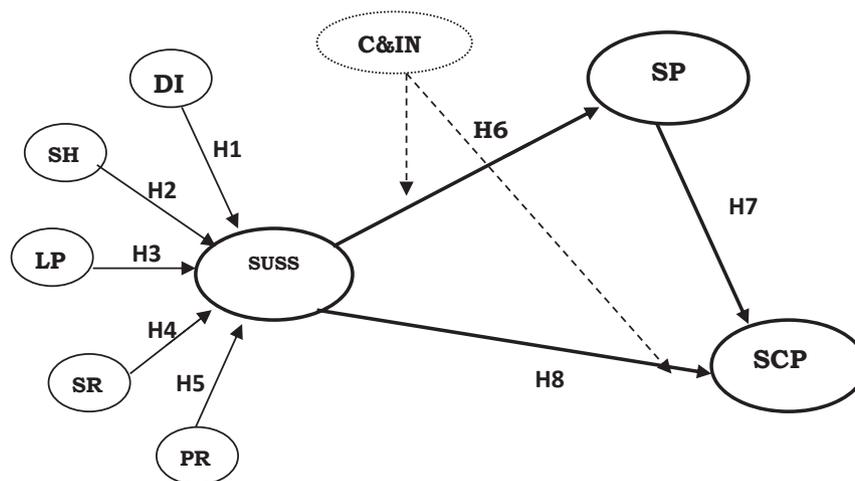


Fig. 1. Hypothesized model. (DI = Diversity practices; SH = Safety and health practices; LP = Issues related to labor practices; SR = Societal responsibility; PR = Product responsibility; SP = Supplier performance; SCP = Supply chain performance; C & INV = Commitment and investment).

disruptions, and less delay in product delivery, which increases the operational performance of suppliers and buying firms (Klassen and Vereecke, 2012; Yuan and Woodman, 2010). Linking to stakeholder's perspective, others argue that if the working conditions of the supplier's employees are improved, it in turn improves the quality of the supplied product due to enhancement of employee motivation (Pagell et al., 2010). However, in the literature, a critical analysis of issues such as forced labor and the impact of living and decent wages on the performance of supply chains are either missing or rarely discussed. Future investigations should include critical labor issues to understand the role of labor issues in the supply chain (Yawar and Seuring, 2015; Mani et al., 2016a). Hence, we propose:

H3. *In developing nations, issues related to the supplier's labor practices constitute a dimension of supplier social sustainability.*

According to stakeholder's view, stakeholders are an integral part of the business environment and play a critical role in organizational success (Freeman, 1994). Among all, society is an important element in the environment where an organization operates. It is important for the organization to satisfy the needs of the stakeholders, thereby enhancing perception in the minds of stakeholders toward products and services that invariably lead to better performance by the organization (Mardoss et al., 2016). Building on the resource-based perspective, Carter and Jennings (2004) identified philanthropic activities as part of the social sustainability dimension that enhances supply chain performance through increased trust and learning. Similarly, Hutchins and Sutherland (2008) identify philanthropy as an important measure toward social sustainability that is linked to the social performance of the country. A few scholars, extending resource based perspective (Branco and Rodrigues, 2006), found companies with good social responsibility practices able to improve relations with external actors such as customers, investors, bankers, suppliers, and competitors. Others assert that social responsibility activities (philanthropy) improve supplier social performance, which in turn contributes to the competitive advantage of the whole supply chain in the form of higher market share and reduced cost (Klassen and Vereecke, 2012). However, social issues are dynamic, contextual, and time-dependent, and need to be embraced in continuous research in supply chain management, especially in the context of developing nations (Yawar and Seuring, 2015; Mani et al., 2016a). Hence, we propose:

H4. *In developing nations, issues related to society constitute a dimension of supplier social sustainability (SUSS).*

Product responsibility suggests predominantly unethical practices related to products that affect not only the employees of the firm but, more importantly, customers at the downstream supply chain. According to Husser et al. (2014), ethics is defined as “a science of behavior and decision-making, in the context of conscious and deliberate action to reach a goal. It is the basic principle of correct behavior.” While many agree on this basic definition, there can be perceptual differences on ethical issues that may vary between supplier and buyers. As an extension of resource-based view, Carter (2000) and Maloni and Brown (2006) advocate the use of substandard materials in supplier locations and their impact on supply chain performance. A few others, including Ntayi et al. (2013), Silvestre (2015b) and Lu et al. (2012), discuss bribery and corruptive practices and how they impact the supply chain. In the literature, many scholars emphasize product-related issues that originate from unethical supplier practices. For example, Zsidisin (2003) argues for consumer safety; similarly, others found issues such as faulty automotive design and contaminated food (Roth et al., 2008; Maloni and Brown, 2006) in the supply chain, which caused severe damage to the buyers because of unethical supplier practices. However, Zorzini et al. (2015) and Yawar and Seuring (2015) argue that in developing nations, there is insufficient research related to these issues, as they still prevail. Therefore, we propose:

H5. *In developing nations, social issues related to product responsibility constitute a dimension of supplier social sustainability.*

3.1. Social sustainability and supplier performance

There are numerous studies that describe social sustainability adoption practices and their linkages to supplier performance. Akamp and Muller (2013), in their research, found the relationship between a supplier's training and engagement practices and a positive impact on supplier performance. The improvement of working conditions in the suppliers' locations results in accident reductions, fewer disruptions, and less delay in product delivery – these in turn improve the performance of suppliers in the form of more reliable supply, less lead time (Freire and Alarcón, 2002; Yuan and Woodman, 2010), and a high quality of products through increased employee motivation (Pagell et al., 2010; Pagell and Gobeli, 2009). Building on stakeholder's resource-based view, Carter and Jennings (2004), through purchasing social responsibility, found the adoption of social sustainability practices and suppliers' performance enhancement (via lead time improvement, error reduction, efficiency increment, etc.). Mani et al. (2016a), through case study research in emerging economies, identify social sustainability practices and supplier performance; however, they point out that this study needs to be further investigated statistically. Additionally, global firms increasingly find their supplier base in developing locations, and the actions of suppliers in those locations put the buyers at risk (Klassen and Vereecke, 2012). The research in developing nations needs further investigation (Yawar and Seuring, 2015). Therefore, we propose:

H6. *Adoption of social sustainability practices by the supplier positively relates to supplier's performance.*

In the literature, many studies confirm the relationship between a supplier's performance and the buyer's supply chain performance. This means suppliers are important entities in the supply chain. Their actions directly affect the supply chain performance of buying organizations, which in turn impacts their strategic (reputation, image, and customer satisfaction), financial (sales), and operational (operational efficiency) performance (Foerstl et al., 2010; Gualandris et al., 2014; Busse, 2015). On the other hand, Pagell and Gobeli (2009) found that improving the working conditions of suppliers' employees helps achieve better quality products through enhanced employee motivation, which is indirectly linked to the buyer's operational performance. Saunders et al. (2015) assert the mediating role of suppliers' performance to buyers' supply chain performance in the construction industry. We found mixed results of social sustainability practices affecting supply chain performance indirectly through suppliers (Carter, 2000; Mani et al., 2016a), directly through the buyer's supply chain performance (Gualandris et al., 2014), and no relationship at all (Gallear et al., 2012; Hollos et al., 2012). The existence of mixed results could be because most of the studies, except Carter (2000) and Akamp and Muller (2013), have not considered the role of suppliers in their models. Based on the existing literature, we believe that a supplier's performance mediates the relationship between supplier social sustainability practices and buyer's supply chain performance (Fig. 1). Hence, we propose:

H7. *In developing nations, supplier performance mediates the relationship between supplier social sustainability practices and buyer supply chain performance.*

Additionally, the literature also supports the direct linkage between supplier social sustainability practices and buyer supply chain performance (Gimenez et al., 2012; Klassen and Vereecke, 2012). Krause et al. (2000), in their research on socially sustainable supplier development practices, state that the buying firm's motivation has two aspects. The first is to improve the supplier's performance and guarantee their own supply chain needs. Ultimately, an undisturbed supply of goods leads to better supply chain performance. Similarly, Klassen and Vereecke (2012)

found that supplier collaborative activities on social issues between buyer and supplier lead to better economic results, in the form of cost reduction and market expansion. Others describe that social sustainability practices in the supply chain contribute to improved quality, cost, and delivery due to the buying firm's employees' motivation. The adoption of such sustainability practices in the supply chain contributes to the buying firm's supply chain performance (Andersen and Skjoett-Larsen, 2009; Carter and Jennings, 2004; Mani et al., 2016a) through increased sales, because customers are happy and may be willing to purchase goods that are coming from socially sustainable manufacturing practices. More socially oriented firms' employees are motivated (Zukin and Szeltner, 2012); therefore, the cost of absenteeism could be reduced and productivity is increased, which also results in cost reduction. On the contrary side, Gallea et al. (2012) and Hollos et al. (2012) found no relationship between social sustainability practices and buying firms' supply chain performance. As the literature suggests mixed results, and recent suppliers' actions are in developing countries, we attempt to explore further such relationships in developing national perspective. Hence, our proposition is:

H8. *There is a positive direct relationship between a supplier's social sustainability adoption practices and a buyer's supply chain performance.*

3.2. Buyer's investment and commitment as moderator

Social sustainability investment is drawing the attention of practitioners as they slowly understand the benefits resulting from such investments (Pagell and Wu, 2009; Busse, 2015). According to Krause et al. (2000) and Carter and Jennings (2004), investments into socially sustainable supplier development practices help in better supplier performance and undisrupted supply to the buyers, which indirectly results in buyers' improved supply chain performance. In another study, building on resource-based view and institutional theory, social sustainability investments and buyers' commitment to such investments have significant effect on supply chain performance and buyers' overall performance (Bansal, 2005). Buyers' investments in social sustainability may be in the form of socially sustainable supplier development, supplier collaboration, supplier integration, training, implementation, technology sharing, and certifications (Akamp and Muller, 2013; Gimenez et al., 2012; Klassen and Vereecke, 2012).

Some scholars advocate for social sustainability investment and commitment to such investment because it benefits the supplier's performance and the buyer's operational performance (Carter, 2000; Klassen and Vereecke, 2012). Others, on the contrary, found no such benefits from investing in social sustainability practices in the supply chain (Gallea et al., 2012; Hollos et al., 2012). Therefore, it is interesting to explore whether SS investments and commitment moderate the supplier's performance and the buyer's supply chain performance in emerging economies. According to Mishra et al. (2016), building on resource dependence theory (RDT), which emphasizes a firm's relationship with other exchange partners, prospective companies invest and commit to supplier sustainability practices, which in turn mitigates the supply chain risk through buffering strategies.

Commitment to sustainability can be described through top management actions and the development of an organizational culture that promotes sustainable behavior. Studies have shown that a buyer's commitment, investment, and leadership are important to the implementation of sustainable practices (Walker and Jones, 2012; Zhu et al., 2005; Pagell and Wu, 2009). On the other hand, strategic collaboration and commitment with suppliers enables the companies to develop supply chain resources and capabilities (resource-based view) that can be used for product and process design as well as error minimization and cost reduction (Paulraj, 2011). Based on RDT and RBV, we explore the moderating role of buyers' commitment and investment on suppliers' social sustainability initiatives in developing nations.

4. Research design

To collect data, we employed a mail survey with a structured questionnaire. The data were collected from Indian manufacturing firms. We used two criteria to select participant firms. First, the firm must have spent considerable time in business operations in India (10 years). Second, the firm must have revenues over 1.0 billion INR. These criteria were used to ensure the firms have adequate experience both in sustainability and target market. These criteria were applied because previous research suggests that smaller firms tend to lag (Min and Galle, 2001) when it comes to sustainability, as opposed to larger firms whose revenues are high. These ones are most likely to be inclined toward sustainable efforts (Pagell et al., 2004). This ensures that participants are more appropriate and relevant to this study. Additionally, we used key informants from each organization who were knowledgeable and employed in key executive management positions. The step by step procedure for research design is described as follows.

4.1. Instrument development

Because of the nonexistence of measures to assess supplier social sustainability in emerging economies, we adopted a two-stage measurement development approach. First, we conducted a structured literature review to identify existing measures related to supplier social sustainability in the upstream supply chain. Additionally, we formed an expert panel (Yeung, 2008) that included academics who have spent two decades teaching supply chain, sustainability, and CSR, and practitioners with two decades of experience in supply chain functions (Bryman, 2008). In the second stage, semi-structured interviews were conducted with 27 supply chain managers from our sampling frame. Interviews were recorded, transcribed, and analyzed to get a comprehensive list of measures, as well discussed in the relevant literature. These discussions resulted in the agreement that, in Indian manufacturing industries, supplier social sustainability (SUSS) is a second-order latent construct that is based on five dimensions: diversity, health and safety, product responsibility, labor rights, and societal responsibility (Mani et al., 2016a). Additionally, we sought opinions and agreement from the expert panel when there was a disagreement on some measures. We corroborated with the social sustainability literature for further clarification and wrap up. The whole process yielded a comprehensive list of 18 measures (Appendix 1) relevant to supplier social issues.

In addition, for constructs such as supplier performance, supply chain performance, and buyer commitment and investment, we adopted the existing measures. The supplier performance construct was earlier operationalized by Carter and Jennings (2004) with four measures: supplier's delivery speed, efficiency, reliability, and hassle-free environment (Akamp and Muller, 2013); supply chain performance by Carter and Jennings (2004) and Chin and Tat (2015) had four measures. Similarly, buyer's commitment and investment was operationalized by Carter (2000) and adopted. The expert panel was of the opinion that these constructs are relevant to social sustainability in the supply chain and suggested that they can be adopted with small modifications (Appendix 2). After generating 18 scale items for supplier social sustainability, a pilot test was conducted with 27 supply chain managers for face validity and readability, as proposed by Heeler and Ray (1972). Experts proposed minor changes and modifications to the items in the questionnaire, and accordingly, changes and modifications were made.

4.2. Sample and method of data collection

We used the Center for Monitoring of Indian Economy (CMIE) online database, known as Prowess. The CMIE database is authentic in providing listed companies and their financial information. We mailed 1200 supply chain managers who belong to different manufacturing firms (as part of our sampling frame) as proposed by Dillman's (2007) sampling procedure for questionnaire formatting, distribution, and

collection. 228 mailings were returned back from the post service because of incorrect mailing addresses, or the executive was no longer working there, etc. We received 308 usable responses in total. They were all reviewed for errors and missing information. We found eight questionnaires with missing data, and despite our follow-up efforts, we only succeeded in completing one, and the others were discarded. The overall response rate is 30.86%, with a total of 300 out of 1200 surveys completed. The sample characteristics are presented in Table 1.

In survey research, key informant issues are bound to happen. To address key informant issues, we used two measures to assess the knowledge of the respondents: number of years in SCM function and current designation (Campbell, 1955). Three responses were excluded as they were below the rank of senior executive, which is the level required for responding to sustainability-related topics (John and Reve, 1982).

4.3. Common method bias and non-response bias

In a single informant survey research, there is the possibility of common method bias. Further, there has been a concern raised regarding reliance on statistical tools alone to test common method bias (Richardson et al., 2009). We employed an a priori approach to avoid such biases, including using well-defined constructs, avoiding biased language, and following best practices for survey research as suggested by Rindfleisch et al. (2008). Although there was little evidence of common method variance, we nonetheless used a latent method factor (common factor) approach in the analysis, using Amos 20, which served to correct for common method bias in the results (Podsakoff et al., 2003).

To address non-response bias issues in the survey design, we used two approaches. First, a multivariate *t*-test was performed to find out whether significant difference exists between the early group of respondents and the late group. The results show that there was no significant difference. Second, we sent an abbreviated form of the questionnaire to a random selection of 20 respondents, and with follow-up calls, completed questionnaires were collected, as suggested by Lohr (1999) and Wagner and Kemmerling (2010). Again, a *t*-test was performed, comparing these responses to the responses collected during the data collection phase, and we found there was no significant difference between them.

Table 1
Sample characteristics.

Industry	Frequency	Percent
Automobile industry	40	13.33
Food, sugar, edible oil	47	15.66
Pharmaceutical industry	23	7.66
Chemical industry	25	8.33
Electrical and electronics/IT products	24	8
Architectural/construction/cement industry/steel	29	9.66
Apparel manufacturer/spinning/yarn/cotton	46	15.33
FMCG/package food and beverages	12	4
Power generation	5	1.66
Consumer durables manufacturer	4	1.33
Oil and natural gas industry, mining and minerals	3	1
Packaging solutions company	4	1.33
Laminates, plywood/ceramic tiles and infrastructure Solutions manufacturer	6	2
Paper manufacturer, publication industry	5	1.66
Rubber and natural products	3	1
Ship building company	2	0.66
Others (breweries, jewelry, packaging solutions)	5	1.66
Mechanical, compressor manufacturers, mould and dies, drill pipes, farm equipments, fluid controls, metal injection, medical equipment, etc.	8	2.66
Pipes/piping solutions/pumps and valves/steel drums/thermo plastics/tubes and foils/manufacture	7	2.33
Leather, tanneries, footwear manufacturer	2	0.66
Respondent's experience		
1–5 years	14	4.7
5–10 years	112	42.0
Over 10 years	174	58.0
Total	300	100

5. Data analysis and results

The primary objective of our study was to identify the social sustainability dimensions for supplier social sustainability in emerging economies. As we discussed earlier, in sustainable supply chain management literature, there are very limited studies focusing on the social dimension of sustainability. This means that a scale that measures social constructs, such as supplier social sustainability and supplier social performance, has not been developed (De Giovanni and Esposito Vinzi, 2012; Yawar and Seuring, 2015). To identify the fundamental constructs underlying our indicators, we performed an exploratory factor analysis with promax rotation (Gorsuch, 1988). Further, we applied three commonly used decision criteria to extract supplier social sustainability dimensions (Hair et al., 2010). First, we excluded the items with a loading less than 0.40 and the items that are cross-loaded onto two or more items. Finally, the factors with eigenvalue over 1 were considered the cut-off value for factor extraction. There were five factors explaining 61.35% (Appendix 3) of total variance. These five dimensions are labeled diversity, health and safety, societal responsibility, product responsibility, and human rights.

To test the unidimensionality of the scales for SUSS for emerging economies, a confirmatory factor analysis (CFA) was performed. We created two measurement models to analyze five SUSS dimensions. In measurement model 1, all five supplier social sustainability dimensions were assumed as first-order latent variables. In measurement model 2, SUSS was considered as a second-order latent construct measured by its constituent first-order variables (Carter and Jennings, 2004). Additionally, two other measurement models were created, for supplier social performance (SP) and supply chain performance (SCP). The results indicate adequate fit with respect to goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), Bentler-Bonett normed fit index (NFI), Tucker–Lewis index (TLI), and non-normed fit index as presented in Table 2 (Bentler and Bonett, 1980; MacCallum et al., 1996; Hu and Bentler, 1999; Hair et al., 2010). Other estimates, such as standardized item loadings, composite reliability, and Cronbach's alpha values, are presented in Table 4.

5.1. Convergent and discriminant validity

Validity can be referred to as how well a test measures what it is supposed to measure. In order to ascertain convergent validity, we need to examine parameters such as the factor loading of the item, average variance extracted (AVE), and composite reliability (Hair et al., 2010). All the estimates with respect to item loadings are presented in Table 4, which shows that items are significantly related to their corresponding factors. Further, Table 3 indicates that the AVE and CR value exceeds the threshold levels ($AVE \geq 0.50$; $CR \geq 0.70$). AVE is a primary indicator of convergence, and a CR value over 0.70 indicates the internal consistency of the latent construct analyzed (Hair et al., 2010). These results suggest adequate fit with respect to convergent validity.

According to Churchill (1979) and Hair et al. (2010), discriminant validity can be evaluated based on three parameters that include examination of factor correlations, maximum shared variance (MSV), average shared variance (AVE), and assessment of whether the square root of AVE is greater than the inter-construct correlations (Hair et al., 2010). Table 3 shows factor correlation values below 0.80, suggesting the discriminant validity of the scale (Bhattacharjee, 2002). Further, the MSV values are

Table 2
Measurement models with fit indices.

Measurement models	CMIN/DF	CFI	GFI	TLI	RMSEA
SUSS: First	1.622	0.953	0.933	0.942	0.046
SCSS: Second	1.963	0.923	0.915	0.910	0.057
SUSS and SP, SCP, and COM & IN	1.502	0.933	0.901	0.925	0.041

Table 3
Convergent and discriminant validity.

	CR	AVE	MSV	ASV	SP	SUSS	SCP	COM
SP	0.735	0.525	0.327	0.178	0.724			
SUSS	0.788	0.546	0.013	0.007	0.082	0.738		
SCP	0.773	0.567	0.327	0.185	0.572	0.114	0.752	
COM	0.796	0.526	0.213	0.139	0.448	0.050	0.462	0.725

found to be less than the average shared variance of the factors. Additionally, average shared variance values are less than the average variance extracted ($ASV < AVE$). The values presented in Table 3 suggest the square root of AVE is greater than inter-construct correlations. Therefore, all the latent constructs have cleared the discriminant validity.

5.2. Structural model

In order to test our hypothesized relationships between our latent constructs, we used structural equation modeling (Amos 20.0) with maximum likelihood estimation (MLH). The theoretical model is analyzed based on the fit between the theoretical model and the data through the goodness-of-fit indices. These indices are popularly known as Bentler and Bonett's (1980) non-normed fit index (NNFI), goodness-of-fit index (GFI), Bentler's (1989) comparative fit index (CFI), and root mean square error of approximation (RMSEA) (Steiger, 1990). According to Hair et al. (2010), the values 0.90 and above for CFI and GFI and values below 0.08 for RMSEA suggest adequate fit between the hypothesized model and the data. We first performed a first-order confirmatory factor analysis, and the results show that there are five latent variables – diversity, health and safety, product responsibility, human rights, and societal responsibility – that are independent in predicting supplier social sustainability (SUSS). The latent constructs SH, PR, LR, and SR are measured by four items, whereas DI is measured by three items in the model. The fit indices for the first-order model stand at χ^2 (DF): 1.622, CFI: 0.953, GFI: 0.933, and RMSEA: 0.046, showing adequate fit (Table 2). All the factor loadings are significant at $p < 0.001$, indicating the convergent validity of the constructs (Hair et al., 2010).

Although our first-order model shows adequate fit with regard to fit indices, we again performed second-order confirmatory factor analysis to see the importance of each social dimension individually in order to understand different social issues and their significance to the supplier social sustainability phenomenon (Carter, 2000). Our second-order model's fit indices (Table 2) show better model fit as compared to the first-order model. All the first-order latent variables (DI, SH, PR, LR, SR) leading to second-order latent variables (SUSS) are significant. The path loadings of DI, SH, PR, LR, and SR toward supplier social sustainability describe diversity practices at 0.75, health issues (0.31), product

Table 4
Results of confirmatory factor analysis.

Construct in the model	Measure	Items loading (Standardized)	t-value	p-value	Composite reliability (CR)	Cronbach's alpha
SUSS	LR	0.78*	4.974	***	0.788	0.80
	SH	0.31*	3.465	***		
	SR	0.79*	5.405	***		
	DI	0.75*	5.755	***		
	PR	0.58*	**	***		
SCP	SCP1	0.64	**	***	0.773	0.79
	SCP2	0.89	8.781	***		
	SCP3	0.80	9.909	***		
	SCP4	0.76	9.768	***		
SP	SP1	0.78	7.612	***	0.735	0.75
	SP2	0.80	7.619	***		
	SP3	0.66	7.476	***		
	SP4	0.69	**	***		
CO & IN	CO1	0.70	**	***	0.796	0.71
	CO2	0.60	4.903	***		
	CO3	0.71	4.828	***		

***All values are significant at $p < 0.001$; ** Fixed at 1.0 for estimation purpose; * Path loadings are significant at $p < 0.001$.

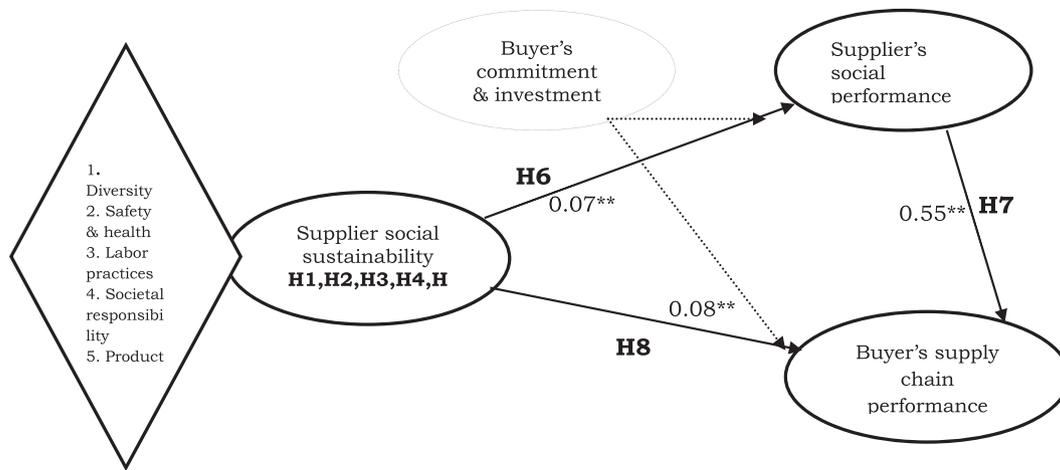
responsibility issues (0.58), labor rights (0.78), and societal responsibility (0.79) in suppliers (Table 4). This shows supplier social sustainability comprises various social issues at different magnitudes. Furthermore, the second-order model for SUSS passed all goodness-of-fit parameters: chi-squared test: $2/df(CMIN) = 1.963$, goodness-of-fit index (GFI) = 0.915, non-normed fit index (NFI) = 0.901, confirmatory fit index (CFI) = 0.923, and root mean square error approximation (RMSEA) = 0.057 (Table 2). Therefore, it can be concluded that there are five underlying social dimensions that measure supplier social sustainability (SUSS).

To test our hypotheses (H6 to H8), we performed structural equation modeling as presented in Fig. 2. The values in the model for χ^2 (DF): 1.527, CFI: 0.937, GFI: 0.901, and RMSEA: 0.042 show adequate fit (Fig. 2). Further, our results show the path loading between supplier social sustainability (SUSS) and supplier performance at 0.07; between SUSS and buyer supply chain performance at 0.08 (direct); and between supplier social performance (SSP) and buyer supply chain performance at 0.55. All values are significant at $p = 0.001$. The interesting aspect is that buyer supply chain performance is mediated by supplier social performance, which can be found from mediation effects (SUSS to SSP: 0.078; SSP to BSCP: 0.567) (Table 5). This implies that supplier social sustainability issues lead to buyer supply chain performance indirectly, mediated by supplier social performance.

In addition, we performed moderation through Amos 2.0 as suggested by Hayes (2013) to understand the relationship between buyer commitment and investment toward a supplier's social sustainability initiatives and the supplier's performance and buyer's supply chain performance. The results show that buyer commitment and investment in social sustainability initiatives positively affect supplier performance. In addition, we found that such commitment and collaboration toward sustainability impacts the buyer's supply chain performance (Fig. 3).

6. Discussion and implications

Consistent with recent calls for social sustainability research in emerging economies (Torugsa et al., 2013; Yawar and Seuring, 2015), this study explored supplier social sustainability issues and how they can positively enhance supply chain performance in emerging countries. Our



χ^2 (df) = 1.527, CFI=0.937, GFI=0.901, TLI=0.929, RMSEA=0.042

*Ovals represent latent constructs measured by multiple items. All the values are significant at $p < 0.001$.

** All values significant at $p < 0.001$ level.

Fig. 2. Structural model showing relationship between SUSS and supply chain performance.

Table 5 Hypothesis testing results.

Path	Direct effect	Indirect effect	Total effect	Result
H1: Issues related to labor practices → Supplier social sustainability	0.000	0.784	0.784	Supported
H2: Health and safety issues → Supplier social sustainability	0.000	0.320	0.320	Supported
H3: Issues related to society → Supplier social sustainability	0.000	0.782	0.782	Supported
H4: Issues related to diversity → Supplier social sustainability	0.000	0.758	0.758	Supported
H5: Issues related to product responsibility → Supplier social sustainability	0.000	0.580	0.580	Supported
H6: Supplier social sustainability (SUSS) → Supplier performance	0.078	0.000	0.078	Supported
H7: Supplier's performance → Buyer supply chain performance	0.567	0.000	0.567	Supported
H8: Supplier social sustainability (SUSS) → Buyer supply chain performance	0.066	0.044	0.110	Supported

motivation stemmed from the paucity of understanding of the implications regarding the social dimension of sustainability within the context

of emerging economies (Zhu et al., 2005; Zapata and Nieuwenhuis, 2010; Silvestre, 2015a). In addressing this gap, we contribute to the literature in three important ways, as described in the remainder of this section.

First, we conceptualize and test SUSS. A better understanding of the concept is important, given that the majority of world's population resides in emerging economies and these countries encompass a large percentage of world exports. By understanding SUSS, our study bridges the gap in terms of understanding the characteristics of supplier social sustainability in emerging and developed economies. Our study, building on resource-based view (RBV), which supports "possession of tangible or intangible resources which cannot be imitable easily by others would give strategic advantage," proposes five distinguishable dimensions and measures that provide better understanding of SUSS (Barney, 1991). This study is an extension of seminal work by Carter and Jennings (2004), which found five dimensions – environmental purchasing, diversity, philanthropy, safety, and human rights – in developed nations. However, our study differs in two aspects. First, our focus was on suppliers' social practices, unlike Carter and Jennings's purchasing social responsibility (PSR); second, the measures are related to emerging economies.

Further, our measurement scale underlying five SUSS dimensions corresponds to the outcome achieved by Huq et al. (2016) in Bangladesh suppliers that found health, safety, quality of life, and labor rights as social dimensions. However, our results also differ in certain

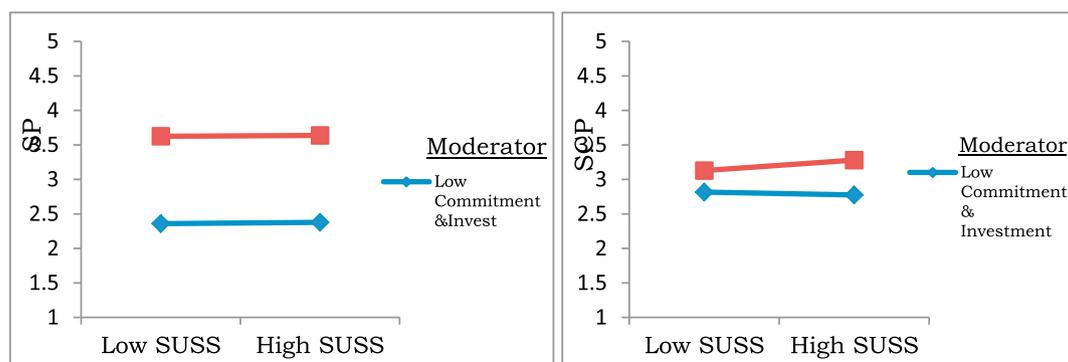


Fig. 3. Moderating relationships between commitment and supplier performance and supply chain performance.

social issues such as quality of life dimension. Further, they observed that buyers collaborations and investment efforts in the absence of effective institutional mechanisms was crucial for enacting social sustainability in emerging economies. On contrary, our results in India show the existence of product responsibility and societal responsibility issues which is not the case in similar economies (Huq et al., 2016; Silvestre, 2015b; Lee and Lee, 2007). This implies that social issues are different and bound to vary. Product responsibility issues including use of hazardous and sub standard material, and safety were predominantly addressed in Indian manufacturing. Our results correspond to the earlier study by Gopalakrishnan et al. (2012) which found ethical issues, inclusion and diversity, safety and environmental performance issues in suppliers. Others identify high level of corruption and how it inflates the supply chain cost in other emerging economies (Brazil) (Silvestre, 2015b). Our results with regard to societal responsibility dimension confirms to Silvestre's results that identified social issues such as sanitation, power supply, and fresh water in Brazilian oil and Gas supply chain.

Other than generic social issues, scholars in emerging economies found industry and location specific social issues, for example Hall et al. (2012) have identified issues including poverty alleviation, health and safety, and educational efforts and Lee and Lee (2007)'s research in Star buck's supply chain have identified child and forced labor, minimum wages, freedom to associate, health and safety. This implies diversity of social issues in emerging economies and the different approaches adopted by focal organizations to address these issues in the supply chain (Hoejmose et al., 2013). Our results are further consistent to the existing literature (Sodhi and Tang, 2011) that pointed out other supplier social issues such as water, food, healthcare and education in major emerging economies (India, Africa, Bangladesh, Philippines, Sri Lanka, Nepal and Mexico). In summary, our results suggest five distinctive supplier social sustainability dimensions that are different and unique to emerging economy such as India. Further, social issues underlying social dimensions identified elsewhere in other emerging economies (Brazil, Africa, and Bangladesh), were considerably different and offer new theoretical perspective. Our research in emerging economy adds new perspective of social issues that are prevalent in the upstream supply chain. With empirically validated SUSS measures (scale), our study provides practitioners and policy makers a unique standpoint of social issues in the upstream supply chain of emerging economies. And also practitioners can use this tool to benchmark their supply chains. This result enables the practitioner's to build socially responsible supply chains in the emerging economies to not only averse risks but to be competitive.

Second, our results demonstrate how supply chain performance can be enhanced via supplier social sustainability adoption in emerging economies. Based on the theoretical underpinnings of resource dependence theory (RDT), inter-organizational collaboration drives the adoption of sustainability in the supply chain (Pfeffer and Salancik, 1978). Such collaborations include sustainable procurement, sustainable distribution, inventory, and design, which potentially help the buying corporations mitigate supply chain risk (Klassen and Vereecke, 2012). From an emerging economy perspective, the role of collaboration in upstream supply chains becomes crucial as the firms confront resources, sustainability, expertise, and capability (Jayaram and Avittathur, 2015). Our outcome proves that effective collaborative practices with respect to social sustainability adoption in the upstream supply chain enhance buyer's supply chain performance there by providing strategic advantage that consistent with similar results achieved by Silvestre (2015b) in emerging economies that states supply chain members gradually learn to become integrative, collaborative, and how to manage the relationship in upstream and downstream supply chain. Thus, supply chains learn new social management capabilities that allow them to develop organizational, technological, and business innovations that help them towards enhanced integration, collaboration and sustainable performance (Silvestre, 2015b).

Other interesting outcome is the mediating role of supplier social performance in enhancing supply chain performance. This means adoption of social sustainability practices in the upstream supply chain enhances the supplier social performance in terms of increased reliability, timely delivery and operational efficiency. Similar results were achieved by Sancha et al. (2016), Akamp and Muller (2013) that established relationship between social sustainability adoption and supplier performance. Further they also proved supplier social performance plays a positive role in enhancing the buying firm's operational performance. Our results are consistent with the current literature (Ehrgott et al., 2011; Lu et al., 2012; Mani et al., 2016a) that indicates a positive and significant relationship between social sustainability and supplier performance (Carter and Jennings, 2004; Sancha et al., 2016; Mani et al., 2016a). This implies suppliers' social sustainability is crucial for the buyers, as it potentially mediates the supply chain performance of buyers in emerging economies. This concurs with the view of recent research by Sancha et al. (2015), which states the potential mediation of supplier social performance. This result proves consistent with resource dependence theory in supply chains which advocates 'how focal organizations manage their reliance on materials and service from their suppliers'. Resource dependence theory (RDT), further states how focal firm minimize their dependence on other organizations and how they can maximize the dependency of other organizations on themselves (Schnittfeld and Busch, 2016). In emerging economies, social sustainability adoption practices in the upstream supply chain through focal firms interventions not only improves the suppliers own performance, but also positively improves the supply chain performance of the focal firm. This result also provides important implications for the practitioners that by ensuring social sustainability adoption practices in emerging economies, the supply chain performance can be enhanced. Thus managers now can be more informed in their decision making process with respect to how building sustainable supply chains results its positive performance outcomes.

Additionally, our results show that the extent that buyers display their commitment and investment toward suppliers, especially in emerging economies, potentially affects the performance of suppliers as well as buyers. Our results are in line with the earlier studies that proved mediating role of collaboration, development and investment and commitment towards supplier social sustainability practices proportionately impacts the buyers operational and supply chain performance (Akamp and Muller, 2013; Sancha et al., 2016). However, both of these do not provide the degree of association of collaboration and investment practices on performance outcome. Our study provides more accurate degree of association between focal firm's commitment, investment and collaborative efforts towards sustainability practices that yields tangible positive results. These results are consistent with resource dependency theory (Schnittfeld and Busch, 2016). In many instances, focal firms demand that their suppliers adopt their social sustainability practices, given the power development aspect of resource development view (Lee et al., 2012). Further, Lee et al. (2012) argue that the strong inter-organizational linkage and collaboration leads to sustainable performance in the organizations. As the buyer's commitment increases, the performance of suppliers and the supply chain increases. This is in line with existing research by Freire and Alarcón (2002) and Yuan and Woodman (2010), who found better working conditions in the suppliers resulted in few accidents and, hence, fewer disruptions in the supply chain leading to delivery outcomes. Furthermore, our outcome proves the resource-based perspective (building tangible and intangible resources), resource dependence view (building inter-organizational resources, dependency reduction), and stakeholders resource-based perspective (nurturing stakeholders' resources for sustainability) in emerging economies (Sodhi, 2015; Pfeffer and Salancik, 1978; Barney, 1991). Our study results can act as an important tool for the practitioners in the big corporations who intent to build socially responsible supply chains in emerging economies. Because of cost advantage benefits, corporations in majority set up their supplier base and even show little

interest in supplier's social sustainability. As the results shows positive tangible benefits of SUSS adoption in supplier's, our outcome can guide practitioners in emerging economies to incorporate sustainability in their strategy level and increase efforts through investment, commitment and collaborations towards enhancing the suppliers social sustainability thereby reaping the benefits of their own operational and supply chain performance.

7. Conclusion

The objective of this research was to identify the various supplier social sustainability measures and dimensions in emerging economies, as the literature on social sustainability was limited (Yawar and Seuring, 2015) and also social issues differ based on social complexities of emerging economies. Diverse social issues increase the complexities and demand specific capabilities in management of such issues. Based on these motivations, our study explored social issues of emerging economy suppliers (India) and underlying social dimensions. A further objective was to explore how the adoption of supplier social sustainability practices pays off in terms of supplier performance and buyer's supply chain performance. Similarly, we wished to explore how far the commitments and collaboration efforts of the buyers towards social sustainability impact the focal firm's performance.

Regarding the first objective, building on resource-based perspective, we found that there are 18 validated social measures (scale), underlying the five social dimensions including diversity, health and safety, product responsibility, human rights, and societal responsibility in emerging economies. This result serves as an important input in the theory building on social sustainability in upstream supply chain as majority of the available literature was either case study or qualitative approaches. This has important implications for theory and practice. In terms of theory, our result adds as incremental knowledge to the supply chain literature, as the literature on social sustainability in emerging economy perspective was limited. In our results, we found labor practices, and product responsibility issues among others were dominant in suppliers. Thus it offers valid knowledge to the practitioners to know the major issues in Asian emerging economies. As our research identified clearly validated social dimensions in upstream supply chain, the product and purchase managers can use this dimensions (scale) to be better prepared strategically for adopting and addressing relevant issues in upstream supply chain. Further, it helps supply chain managers not only in emerging economies but also the focal firms from west can

understand social issues and build socially sustainable supply chains. It also opens up future research avenues for scholars to explore and compare the social issues among developing economies.

Regarding the second objective, our results prove the theoretical underpinnings of resource dependence view (RDV), further strengthening collaboration and supplier development with respect to social sustainability practices, thereby increasing supplier social performance. Further, the implementation of social sustainability in supplier location enhances buyers' supply chain performance. Our results implies the focal firm's collaborative efforts in social sustainability adoption can averse the supply risk and enhance reputation and performance in emerging economies. This has practical implications for supply chain managers in emerging economies. Our results provide better understanding of socially sustainable supplier development and how such development enhances focal firms' supply chain performance.

Third, the focal firm's commitment to addressing social issues in emerging economies goes a long way and affects the supplier's performance in the location they operate in, and positively impacts buyer performance. Buyer interest in supplier social sustainability adoption not only mitigates the supply chain risk, but also enhances performance. Our results also show how focal firms can invest and commit towards suppliers social sustainability adoption practices which in turn results in performance benefits for the focal company. As the practitioners have had limited knowledge of social sustainability efforts and their incentives, our unconventional outcome provides new directions for them toward building sustainable supply chains. Further, it also guides practitioners in emerging economies to invest in such collaborative efforts to build competitive supply chains.

Besides these contributions, our study has some limitations that must be acknowledged. This research expands upon the prior research on social responsibility in developing nations (Huq et al., 2016; Silvestre, 2015b; Mani et al., 2016b). As the measures and dimensions found in this research are more relevant to emerging economies (India), future research in other emerging nations may open up new research perspectives. As the social issues are contextual and bound to change based on the evolution of societies, future research is needed to explore such issues from a cross-cultural perspective. Our research also suggests new research avenues to explore other possible benefits of social sustainability adoption in the upstream supply chain. For instance, future research can explore the SUSS adoption and firms reputation and linkage between SUSS and financial performance.

Appendix 1. Supplier's social sustainability items.

Dimensions	Cronbach's Alpha	Items	Measures
Labor Rights	0.75	LR1	Ensure appropriate labor working conditions
		LR2	We have strict policy for prohibition of child and forced labor
		LR3	We conduct periodic labor audits in supplier locations
		LR4	We maintain strict vigil on labor rights violations
Safety & Health	0.77	SH1	Strict policy on health and safety at work place
		SH2	Ensure health and hygiene
		SH3	Ensure clean drinking water and sanitation
		SH4	We guide suppliers in implementing occupational health and safety measures
Societal Responsibility	0.76	SR1	Helping to develop local suppliers (supplier's supplier)
		SR2	Our suppliers engage in philanthropic activities
		SR3	We collaborate actively with our suppliers in conducting health camps and awareness programs
		SR4	Actively collaborate to conduct skill development programs for unemployed youths
Diversity	0.79	DI1	Hiring locals, women, people with disabilities, the marginalized, and minorities in supplier's locations
		DI2	Promoting every employee equally based on merit
		DI3	Not denying any rights and privileges to employee because of their age, sex, race, community, religion, or nationality
Product Responsibility	0.72	PR1	Avoiding sub-standard materials in manufacturing
		PR2	Restricted usage of hazardous materials
		PR3	Supplier compliance to local regulations

Appendix 2. Measures of supplier performance and supply chain performance.

Measure	Cronbach's Alpha
Supplier's social sustainability (SUSS)	0.85
Labor rights (0.78)	
Health and safety (0.31)	
Societal responsibility (0.79)	
Diversity practices (0.75)	
Product responsibility (0.58)	
Supplier performance	0.75
• Suppliers meet delivery schedules (0.78)	
• Suppliers reliability has increased (0.80)	
• Our suppliers are able to minimize errors and increase operational efficiency (0.66)	
• Achieve hassle-free operational environment (0.69)	
Supply chain performance	0.79
• Increased customer satisfaction/Customer service levels (0.64)	
• Compressed order cycle time/lead time (0.89)	
• Reduced operating costs (0.80)	
• Achieve on time delivery/delivery precision (0.76)	
Buyers commitment and investment	0.71
Our firms initiatives towards supplier's social sustainability	
• We are very committed (0.70)	
• We intend to maintain indefinitely (0.60)	
• We are willing to make long-term investments in (0.71)	

Appendix 3. Results from exploratory factor analysis for supplier social sustainability (SUSS) items.

		Component				
		1	2	3	4	5
Labor rights	LR1	0.716	0.002	0.136	0.153	0.064
	LR2	0.678	0.130	0.011	0.244	0.165
	LR3	0.670	-0.013	0.282	0.161	0.187
	LR4	0.637	-0.087	0.251	-0.073	0.048
	LR5	0.604	0.164	0.065	0.368	-0.020
Safety and Health	SH1	0.100	0.789	-0.008	0.195	-0.010
	SH3	0.035	0.784	0.061	-0.111	0.195
	SH2	-0.028	0.769	0.024	0.149	0.121
	SH4	0.007	0.672	0.199	-0.136	0.290
Societal Responsibility	SR1	0.134	0.081	0.762	0.096	0.172
	SR2	0.162	0.144	0.725	0.195	0.003
	SR3	0.239	-0.022	0.698	0.174	0.115
	SR4	0.096	0.044	0.674	0.158	0.098
Diversity Practices	DI2	0.135	0.105	0.239	0.804	0.109
	DI1	0.171	-0.027	0.230	0.773	0.115
	DI3	0.339	0.028	0.187	0.691	0.113
Product Responsibility	PR1	0.051	0.218	0.073	0.061	0.828
	PR2	0.103	0.066	0.216	0.170	0.719
	PR3	0.200	0.215	0.071	0.075	0.705
Cronbach's alpha		0.752	0.779	0.762	0.794	0.724
Eigenvalue (sum of squares)		5.36	2.51	1.40	1.26	1.12
Cumulative variance explained		28.21	41.42	48.79	58.44	61.35

*Values in bold denote factor loadings.

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