



## **DOCTORAL THESIS**

<b>Title</b>	Cooperative Relationships between Firms and Secondary Stakeholders for the Creation of Value in Sustainable Supply Chains
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*"I can't change the direction of the wind, but I can adjust my sails to always reach my destination"* **James Dean, (1928-2010)**

To my parents, John and Ana, who taught me how to handle  
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## **List of Abbreviations**

3BL: Triple bottom line.

BOP: Bottom of the pyramid.

CIS: Community Innovation Survey.

CSR: Corporate social responsibility.

ERP: Enterprise resource planning.

GRI: Global Reporting Initiative.

GSCM: Green supply chain management.

IT: Information technology.

NGO: Non-governmental organization.

PPP: Purchasing power parity.

R&D: Research and development.

SCM: Supply chain management.

SD: Supplier development.

SME: Small and medium-sized enterprise.

SSCM: Sustainable supply chain management.

TQM: Total quality management.

WCED: United Nations World Commission on Environment and Development.



# **Chapter 1. Introduction**

This chapter introduces the topic and provides a brief overview of the content and structure of the thesis.

Managers face an ever increasing pressure to cut greenhouse gases emissions, substitute hazardous materials, enhance the firm's energy efficiency, reduce firm's water consumption, improve the labor conditions of their employees, and contribute to the welfare of general society (Plambeck, 2012; Seuring and Müller, 2008). It's no longer a myth that we as a mankind have to change the way in which we consume and produce in order to survive in earth. Industry, transportation, electricity generation, and heat production accounts for the 60% of global greenhouse gas emissions (IPCC, 2014). Thus, firms and their supply chains have a critical role to play in the survival of mankind. Yet, managers and firms have limited knowledge and experience to deal with this complex phenomena (Ghisetti and Pontoni, 2015; Wassmer et al., 2012). Previous research suggests that firms have to rethink the process of value creation in order to take into account environmental and social concerns, and that value-creation cooperative initiatives with secondary stakeholders, NGOs, universities and public research institutions, might be an effective mechanisms to create joint economic, environmental and social value (Klassen and Vereecke, 2012; Pagell and Shevchenko, 2014; Parmigiani et al., 2011; Wassmer et al., 2012).

The relationships between firms and some of their secondary stakeholders (such as NGOs) have evolved from an exerting-pressure one where firms were pushed to change their practices and behaviors, to a cooperative one which seeks the implementation of joint initiatives (Arenas et al., 2013; Argenti, 2004). For instance, multi-stakeholders initiatives, where firms, governments and NGOs cooperate in the development of industry standards, are becoming more salient (e.g. Marine Stewardship Council) (Cummins, 2004). Moreover, firm-NGO alliances are another type of inter-organizational cooperation—which is also appearing with more frequency—that promote sustainable practices along the supply chain. For instance Rainforest alliance is collaborating with several firms (e.g. Unilever, Nestle, etc.) in the certification of suppliers to improve the sustainability of the supply chain in the food and beverage industries (Rainforest Alliance, 2014).

Furthermore, social and environmental problems, such as poverty alleviation, sweatshops and child labor, climate change, and deforestation negatively affect the welfare of society, environment and the productivity of firms in the supply chain. These problems are complex because their solution requires the involvement of governments, the private sector, and civil society organizations (Selsky and Parker, 2005), and the private sector has struggled at leading these efforts (e.g. Lund-Thomsen and Lindgreen (2014)). Discussions of SSCM acknowledge that NGOs might be valuable actors in a supply chain. However, the participation of “non-traditional” actors (such as NGOs, universities or public research institutions) have received scant attention in the SSCM literature (Klassen and Vachon, 2012; Pagell and Shevchenko, 2014; Pagell and Wu, 2009).

Additionally, current literature in SSCM focuses on the low-hanging-fruit practices, i.e. the practices that make supply chain less unsustainable instead of the practices that allow a supply chain to be truly sustainable (Klassen and Vereecke, 2012; Margolis and Walsh, 2003; Pagell and Shevchenko, 2014). Hence, previous studies suggest that more research is needed on sustainability innovation and on cooperative initiatives between firms and their secondary stakeholders for creating value in contexts where there are no foreseen synergies between economic and social value (Klassen and Vereecke, 2012; Pagell and Shevchenko, 2014; Seuring and Müller, 2008). For instance, poverty alleviation is a context with no foreseen synergies between economic and social value. It is generally thought that firms that allocate resources in poverty alleviation initiatives might divest resources that could have been used for enhancing the economic performance of the firm (Margolis and Walsh, 2003).

Hence, the focus of this thesis are the cooperative initiatives between firms and secondary stakeholders (e.g. NGOs, universities, and public research institutions) to undertake supply chain management practices that 1) enhance the social sustainability of the supply chain in contexts with no foreseen synergies between social and economic performance, and 2) foster the development of environmental innovativeness. The study of both supply chain management practices for social sustainability and environmental

innovativeness contribute to the literature on SSCM in the following ways. First, the thesis illustrates how firms and NGOs can work out their organizational differences in order to undertake cooperative initiatives that create social value in the supply chain. Second, the thesis also illustrates how NGOs can lead supply management initiatives that reduce poverty among poor suppliers in developing economies. Third, it also identifies the resources that both NGOs need to create and need to seek within firms in order to undertake supply management practices that reduce poverty. Finally, the thesis presents and tests a model that explains how firms can create environmental innovativeness. The results show that environmental innovativeness is developed through the process of bundling innovation resources into process innovativeness, and then process innovativeness jointly with knowledge brought from public research institutions create environmental innovativeness.

Summarizing, the thesis expands our knowledge on SSCM by pointing out the mechanisms of achieving interorganizational fit between firms and NGOs, identifying the resources for creating value in contexts with no foreseen synergies between economic and social value, and explaining how firms can create the capability to environmentally innovate. The thesis follows the format of a monograph based on articles, which are not necessarily already published. The overarching topic of three articles, cooperative initiatives between firms and secondary stakeholders is presented in chapter 2, where a review of the literature and a synthesis of the research questions are presented. Chapter 3, 4, and 5 correspond to each one of the articles that make this thesis, which are briefly explained in the following paragraphs.

Chapter 3 refers to the antecedents of firm-NGO cooperation in socially sustainable supply chain. In this chapter we answer the research question of how firms and NGOs achieve inter-organizational fit to undertake cooperative initiatives that create value in socially sustainable supply chains. This chapter deeply studies the barriers for cooperation between firms and NGOs, and inductively builds a theoretical framework that explain how the organizational-level barriers can be overcome to achieve inter-organizational

fit. This chapter addresses the concern of how firms and their secondary stakeholders can align themselves prior to value creation in SSCM, and it offers suggestions of what managers can do to overcome their differences with secondary stakeholders. This paper is currently under review, and was written in collaboration with Dr. Cristina Gimenez and Dr. Daniel Arenas.

Chapter 4 studies how NGOs can have an active role in socially sustainable supply chain management, and implement traditional supply management practices (e.g. supplier development programs) for alleviating poverty among poor farmers. The research questions answered in this chapter are the following: a) what resources do NGOs use when they undertake supply-management practices for poverty alleviation? b) What firm resources do NGOs seek when they undertake supply-management practices for poverty alleviation? This chapter contributes to the stakeholder view of SSCM by identifying the process of resources-deployment, specifying the resources needed to alleviate poverty and describing how NGO-firms complementarity is achieved. This paper has been accepted for publication in the *Journal of Supply Chain Management*; and it has been written in collaboration with Dr. Cristina Gimenez, Dr. Daniel Arenas, and Dr. Mark Pagell.

The last paper of this thesis is presented in chapter 5. This paper studies how innovation resources (internal and external) and knowledge brought from secondary stakeholders are deployed within the firm to develop environmental innovativeness. The paper uses the resource management framework proposed by Sirmon et al. (2007), which explains how firms' resources bundle into capabilities which in turn create competitive advantage. But, the model is used to explain how the capability to environmentally innovate is created from innovation resources. Then, this model is tested and the results suggest that process innovativeness is a mediating capability for creating environmental innovativeness. In addition to this mediating capability, the knowledge brought from public research organizations is also bundled into environmental innovativeness. Hence this paper contributes to the SSCM literature by explaining how environmental innovativeness is developed at the firm level. This paper has been written with the collaboration

of Dr. Frank Wiengarten. Finally, chapter 6 presents the overall conclusions of the thesis, discusses the main contribution of its papers, present the limitations of the thesis and suggests avenues of future research. The references of all the articles are included at the end of the thesis.



## **Chapter 2. Overarching Conceptual Framework of the Thesis**

This chapter presents a panoramic snapshot of the thesis. It provides the whole picture of the phenomenon studied. It focuses on the building blocks of the literature that support the thesis; justifies the need to undertake this research, and outlines the contribution to the SSCM literature.

## **2.1. Literature Review**

The phenomenon of research of this dissertation is the creation of value in SSCM. Specifically, the thesis focuses on NGO-firm partnerships to undertake supply management practices that alleviate poverty, and on the development process of firm's environmental innovativeness. In this regard, the thesis is built upon the literature of SSCM, stakeholder theory, and the resource based view. However, in this section only the common concepts of the three papers are reviewed. These common concepts are: value creation in SSCM, stakeholder relationships in the context of SSCM, and environmental innovativeness. Then, each paper has its own literature review, which documents in a profound way the pertaining concepts of its research questions, theoretical contribution and research designs.

Consequently, this chapter is structured in the following way: Firstly, the concept of sustainability and SSCM is introduced. Secondly, the chapter describes the logic of value creation in the context of SSCM and stakeholder theory, and presents two avenues to overcome the trade-offs in the process of value creation. Thirdly, we review the literature of stakeholder engagement, participation, and pressure to identify the gap in the literature where this thesis contributes. Finally, the conceptual domains of cooperation with stakeholders, and environmental innovativeness are presented.

### **2.1.1. Sustainable Supply Chain Management: Moving Beyond the Does-It Pay-To-Be-Sustainable Debate**

The threats of climate change are unequivocal: global sea level rose 17 centimeters in the last century; global surface temperature have risen in the last decades more than what had risen in the previous century; the top 700 meters of ocean show warming of 0.302 degrees Fahrenheit since 1969; the mass of ice sheets have decreased, Greenland lost 150 to 250 cubic kilometers of ice per year between 2002 and 2006 (NASA, 2016). In this regard, industry, transportation, electricity generation, and heat production accounts for the 60% of global greenhouse gas emissions (IPCC, 2014). Also, the emissions stemming from the supply chain account for the majority of emissions in the industry (i.e. transportation of goods, packaging of products, extraction of

minerals and crops of agricultural products, etc.) (Downie and Stubbs, 2013). On the social side, gender inequality, modern practices of slavery, unsafe workplaces, bribery and corruption practices of upstream suppliers constitute sources of risk for focal firms in the supply chain (Ciliberti et al., 2011; Gold et al., 2015; Locke et al., 2007). Consequently, managers must manage the environmental and social impacts of their supply chains to be competitive in the long term, and assure the availability of resources for future generations (Linton et al., 2007; Lubin and Esty, 2010).

SSCM refers to the systemic coordination of key business processes, from raw material extractions to customer's disposal of used products, in order to achieve the economic, environmental, and social goals of the individual company and supply chain members (Carter and Rogers, 2008; Linton et al., 2007). SSCM is a holistic concept because it simultaneously considers the supply chain performance regarding the natural environment, its economic performance, and society (Carter and Rogers, 2008; Seuring and Müller, 2008). Examples of SSCM practices include: life cycle assessment to product and process design, product life extension (Linton et al., 2007), suppliers' code of conduct which include environmental aspects and human rights (Locke et al., 2007), supplier development programs to include economic vulnerable suppliers in developing countries (Alvarez et al., 2010), and ethical and green sourcing policies (Roberts, 2003).

Additionally, the study of environmental initiatives in the context of supply chains is named green supply chain management (GSCM) (Rao and Holt, 2005; Srivastava, 2007). The practices of GSCM entail four factors: internal environmental management, external GSCM, investment recovery, and eco-design (Zhu and Sarkis, 2004). The factor of internal environmental management focuses on activities such as total quality environmental management, environmental management systems (e.g. ISO 14000), environmental audits, and cross-functional cooperation for environmental improvements. The factor of external GSCM refers to cooperation with suppliers and customers in projects related to eco-design, cleaner production processes, green packaging, and environmental certifications and audits to suppliers. Investment recovery refers to the extension of product life cycle;

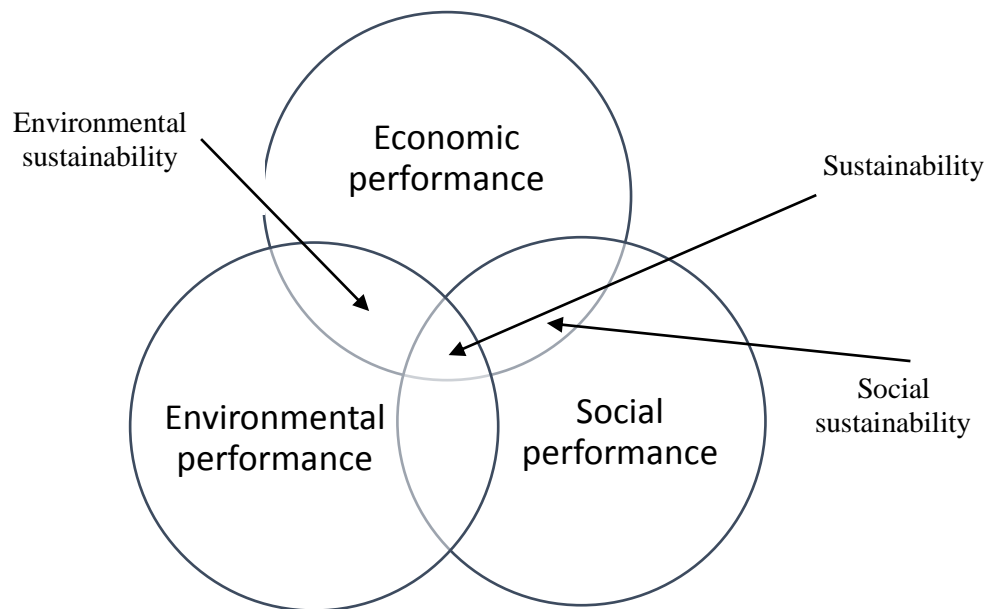
remanufacturing or recycling of used products. Finally, eco-design refers to product and process designs that aim to optimize the consumption of materials or energy; to minimize the disposal of hazardous materials to the environment; and to maximize the use of the materials disposed after the product or service is consumed (Handfield et al., 1997; Klassen and Vachon, 2012; Zhu and Sarkis, 2004).

Moreover, socially sustainable supply chain management refers to the impacts of the supply chain processes in the equity and social justice of stakeholders and society in general (Gimenez et al., 2012; Pullman et al., 2009). Yet, there are fewer studies addressing issues about socially sustainable supply chains (Seuring and Gold, 2013). The literature classifies social sustainability practices into internal or external. Internal practices include safe and healthy labor conditions, freedom of association for workers, the avoidance of child labor, etc. (Gimenez et al., 2012; Pullman et al., 2009). External practices entail a firm's actions to control and foster social equity outside its boundaries, for instance, audits and certifications of suppliers to avoid unfair labor conditions (e.g., sweatshops, human trafficking, immigrant exploitation), participation in consumer associations to promote customers' wellbeing, engagement with stakeholders to foster the development of local communities, etc. (Gimenez et al., 2012; Klassen and Vereecke, 2012; Pullman et al., 2009).

A system, process or organization is sustainable when it meets present needs without compromising the resources or the ability of future generations to satisfy theirs (Brundtland et al., 1987). Most studies on SSCM operationalize the sustainability concept through the framework of the Triple Bottom Line (3BL) (Carter and Rogers, 2008; Gimenez et al., 2012). The 3BL approach encompasses elements of economic prosperity, environmental quality, and social justice (Elkington, 1997) (see Figure 2.1). In this regard, the operations of a firm are sustainable when they are efficient in the disposal of residuals to the environment (e.g. GHG, garbage, etc.); optimizes the usage of energy; minimally harms the environment (e.g. animal biodiversity, forests, rivers and lagoons, etc.); uses reusable or recyclable materials in their production process; takes care of their employee's safety and welfare;

performs business activities with economically vulnerable people; avoids child labor, sweatshops and any form of modern slavery; etc. (Corbett and Klassen, 2006; Elkington, 1997; Kleindorfer et al., 2005; Seuring and Müller, 2008).

**Figure 2.1: The Triple Bottom Line**



**Source:** This figure was adapted from (Carter and Rogers, 2008, p. 365).

Moreover, the 3BL framework has been the base for sustainability reporting standards such as the Global Reporting Initiative (GRI). This standard suggest managers to identify the sustainability aspects that are material for the firm and their stakeholders. Then, it proposes aspects for each dimension of the 3BL. For instance, within the environmental dimension it suggests biodiversity, CO<sub>2</sub> emissions, water consumption, etc.; within the social dimension it suggests human rights, society, and product's responsibilities. Next, for each aspect the standard presents indicators which

allow managers to measure and monitor the sustainability aspects that are material to the firm (GRI, 2014).

Even with the advancement of reporting on sustainability aspects, there is a tension in the literature regarding the relationship between sustainability practices and the firm's economic performance. On one hand, there is favorable evidence suggesting that both environmental and social supply chain practices have a positive effect on environmental, social, and economic performance (Gimenez et al., 2012; Golicic and Smith, 2013; Montabon et al., 2007; Orlitzky et al., 2003; Porter and Van Der Linde, 1995). These studies suggest that it does pay to be sustainable. On the other hand, there are other set of studies that document negative effects of environmental/social performance on firm's economic performance (Jacobs et al., 2010), or the inability to establish causal relationships between environmental/social practices on firm's performance (King and Lenox, 2001b). The logic behind these results is that environmental or social practices divert resources that otherwise could be used to better enhance the economic performance of the firm (Margolis and Walsh, 2003). Consequently, there are trade-offs between the dimensions of the 3BL (Elkington, 1997; Seuring and Müller, 2008)

Other scholars suggest that this mixed evidence is because of the absence of moderators or mediators between these relationships (Golicic and Smith, 2013). In this regard, instead of asking whether it pays to be sustainable, the field needs research about the conditions and contextual factors that allow synergies between the dimensions of the 3BL (Golicic and Smith, 2013; Pagell and Shevchenko, 2014). Consequently, we need to understand how value is created in SSCM and whether this created value satisfies the expectations of firm's stakeholders.

### **2.1.2. Value Creation in the Context of the Triple Bottom Line**

The concept of value creation within the framework of the 3BL is not explicitly stated. Elkington (1998) argues that firms need to address their economic, environmental and social aspects in order to serve better their stakeholders. **Bowman** and Ambrosini (2000) define use value as the utility a

consumer enjoys when purchases a good or service. Exchange value is the amount paid by the consumer or buyer for the sold product. In this sense, a firm creates value when it creates use value; and a firm captures value when it realizes exchange value. These authors further argue that value is created through the actions of organizational members for transforming tangible resources into products or services that would be perceived as valuable at the moment of the exchange. Yet this approach of value creation only focuses on the activities that are perceived as valuable by the consumer.

The vision of value by Bowman and Ambrosini (2000) includes no reference of use value from other stakeholders whose preferences might relate to the environmental and social dimensions of the 3BL. Although consumers are beginning to incorporate environmental and social criteria in their perceptions of use value (Devinney et al., 2010), this vision is not enough for accounting the process of value creation within the context of SSCM. From a different perspective, stakeholder scholars suggest that value is created when the process of transforming resources and materials into products and services enhance the use value of firm's stakeholders (Freeman et al., 2010; Harrison et al., 2010). In this sense, managers have to design their business processes in order to harmonize the perceived use value from all their stakeholders. Hence, a firm creates value when it makes profits for its shareholders; creates long-term business relationships with its suppliers; provides goods and services that satisfy consumers' needs; fulfills orders without harming the environment and society; provides a safety work environment for its workers; etc.

Furthermore, the stakeholder theory vision of value also acknowledges the potential conflicts between the use values of several stakeholders. For instance, off-shore manufacturing would create value for customers via lower prices, but at the same time it puts pressure on suppliers to reduce their production costs, which could imply lower wages for suppliers' workers; and also implies higher scope 3 emissions for the natural environment. Hence, the creation of value within the paradigm of stakeholders entails finding situations where fulfilling the interest of one stakeholder does not harm the interest of another one (Freeman et al., 2010). In this sense, the challenge for

managers and a gap in the literature is to understand how these synergistic situations are created.

In this regard, Freeman (2010) argue that conflicts between stakeholders' interest can be seen as opportunity for value creation. He further argues: "*Stakeholder theory focuses on the jointness of stakeholder interests rather than solely on the trade-offs that sometimes have to be made. It does not deny that such trade-offs are necessary, but suggests that they also represent opportunities to think beyond trade-offs to a question of value creation. Stakeholder theory solves the value creation question by asking how we could redefine, redescribe, or reinterpret stakeholder interests so that we can figure out a way to satisfy both, or to create more value for both.*" (Freeman et al., 2010, pp. 15–16).

Similarly, Porter and Kramer (2011) suggest that trade-offs between economic and social performance can be overcome through innovation on technologies, operating methods, and management approaches; they further argue that shared value is about expanding the total pool of economic and social value. Consequently, both Freeman and Porter and Kramer contributions suggest that value can be created even in circumstances where there exists trade-offs. Furthermore, they also suggest that stakeholders' complementary resources and innovations are critical elements to overcome the trade-offs (Freeman, 2010; Freeman et al., 2010; Porter and Kramer, 2011). Additionally, both Pagell and Shevchenko (2014), and Montabon et al (2016) ) argue that radical changes in the way business are managed are needed in order to hit the productivity frontier in a manner that trade-offs between social, economic, and environmental performance are overcome. Therefore, this thesis answers this claim of previous literature and focuses on how firms and their stakeholders can manage and achieve their resource complementarity, and also on the development process of environmental innovativeness.



### **2.1.3. Stakeholder Relationships in the Context of Sustainable Supply Chain Management**

We identify three types of stakeholder relationships in the sustainable supply chain literature: exerting-pressure relationships, accountability-based relationships, and collaborative relationships (see Table 2.1). Most papers that use stakeholder theory study stakeholders' relationships from an exerting-pressure point of view. These authors follow the resource-dependence theory logic and argue that stakeholders possess resources which allow them to exert pressure on the firm to implement sustainable practices. For instance, managers undertake environmental or social sustainability projects due to pressures from secondary stakeholders (Delmas and Toffel, 2008; Hofer et al., 2012; Tate et al., 2011). The accountability-based stakeholder relationships are the ones based on the responsibility felt by managers about the incidents that happen in the supply chain (Gualandris et al., 2015; Hartmann and Moeller, 2014; Parmigiani et al., 2011). These papers study how the exposure to stakeholders affect the monitoring and evaluation of sustainability issues, the factors affecting the liability of focal firms, and the effect that exposure to stakeholders have on the relationship between firms' capability and sustainability-outcomes. Finally, there are also papers that study stakeholder relationships from a cooperative perspective. These relationships are the ones used for complementary-resources purposes, industry self-regulation, sharing knowledge or knowledge transfer projects (Alvarez et al., 2010; Delmas, 2001; Seuring and Gold, 2013).

**Table 2.1: Previous Research using Stakeholder Theory in the SSCM Literature**

<b>Authors</b>	<b>Type of stakeholder relationships studied</b>	<b>Focus of the stakeholder relationships</b>	<b>Main findings</b>	<b>Methodology used</b>
Henriques and Sadorsky (1999)	Regulatory stakeholders, organizational stakeholders, community stakeholders, media	Exerting-pressure	The authors found that more committed firms with the environment are more perceptive of stakeholder's importance.	Survey data analysis
Delmas (2001)	Distributors, customers, community members, regulatory agencies	Collaborative	The impact of ISO 14001 on competitive advantage depends on the firm's involvement of external stakeholders (distributors, customers, community members, and regulatory agencies).	Survey data analysis
Sharma and Henriques (2005)	Regulators, environmental groups, customers, and local communities	Exerting-pressure	Stakeholders using withholding of resources and direct usage of resources influence the adoption of sustainability practices.	Secondary data analysis
Perrini and Tencati (2006)	Employees, shareholders, customers, suppliers, financial partners, state and local authorities, and community	Accountability	The authors develop a sustainability accounting tool to monitor from a qualitative and quantitative point of view the sustainability performance of the different firm's stakeholder relationships.	Conceptual paper

Kassinis and Vafeas (2006)	Communities and regulators, and state's governments	Exerting-pressure	The pressure of stakeholders influence environmental performance. Yet, this pressure is not uniform. The internal heterogeneity of stakeholders and the dependencies associated with them affect the level of environmental performance at the plant level.	Secondary data analysis
Park-Poaps and Rees (2010)	Consumers, competitors, labor regulators, and media	Exerting-pressure	The authors conceptualize socially responsible supply chain orientation, and measure it as a composite of internal organizational direction and external partnership for creation and continuation of fair labor conditions. They found that consumer and competitors pressures are related to internal direction, while competitors and media pressures are related to external partnership.	Survey data analysis
Sarkis et al. (2010)	Clients, government, shareholders, employees, NGOs/society	Exerting-pressure	The authors found that the effect of stakeholder pressure on the adoption of environmental practices is mediated by the level of training in the company. This is because training overcomes the organizational barriers to the implementation of such practices.	Survey data analysis

Alvarez et al. (2010)	NGOs and suppliers	Collaborative	The paper offers a longitudinal case study to study governance mechanisms in supply networks. The paper shows the importance of treating governance mechanisms within the supply chain not as a fixed variable to be determined once and for all in the beginning of a relationship, but rather to adapt the coordination mechanisms of the relationships.	Case study research
Parmigiani et al. (2011)	Consumer activists, NGOs, government	Accountability	The paper develops a conceptual framework that relates supply chain configurations with firm's capabilities, and subsequently to performance. In addition, they argue that stakeholder exposure moderates the relationship between technical and relational capabilities and social and environmental performance; the stakeholder exposure also moderates the relationship between social/environmental and economic performance.	Conceptual paper
Reuter et al. (2012)	Shareholders customers, and general public	Exerting-pressure	Firms with purchasing managers oriented toward the public are more likely to develop an ethical culture and select suppliers based on sustainability criteria. Additionally, purchasing managers oriented toward the public are also more likely to select suppliers based on sustainability criteria.	Survey data analysis

Theyel and Hofmann (2012)	Community advocacy groups, employees, suppliers, customers, and local media	Exerting-pressure	Firms adopt sustainability practices in response to pressure from stakeholders, and firms with high adoption rates also have high rates of product and process innovation.	Survey data analysis
Seuring and Gold (2013)	Suppliers and NGOs	Collaborative	The paper argues that most research still use the responsive approach, where firms respond to stakeholder pressures. Additionally, there is also a strand of research who adopts a collaborative view, but this is only focused on supply chain stakeholders (e.g. suppliers). The authors call for more research on social issues, and about SSCM in emerging economies.	Conceptual paper
Hartman and Moeller (2014)	Suppliers	Accountability	The paper study the phenomenon of consumers making responsible firms for the unsustainable behavior of their upstream partners, which is called chain liability. They found that chain liability increases if an environmental degradation incident results from supplier behavior rather than force majeure, from a company decision rather than individual employee, and if the incident is more severe.	Vignette-based survey experiment

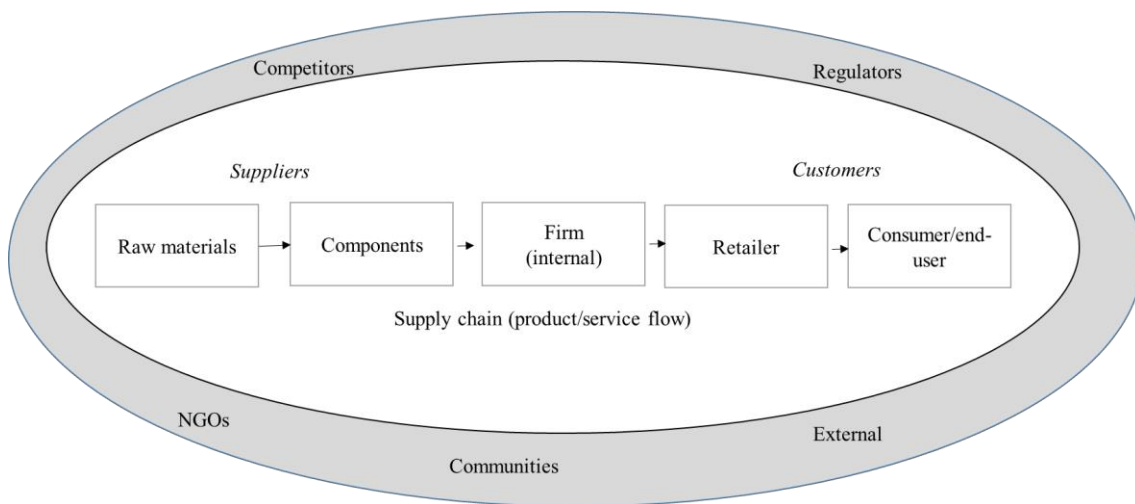
Meixell and Luoma (2015)	Customers, suppliers, government, NGOs, and employees	Exerting-pressure	Stakeholder pressure may result in sustainability awareness, adoption of sustainability goals, and/or implementation of sustainability practices. Furthermore, the type of stakeholder and the supply chain decision area might moderate the relationship between pressure, awareness, adoption and implementation.	Systematic literature review
Silvestre (2015)	Media, government, universities, and supply chain stakeholders	Collaborative	The trajectory of supply chain sustainability is influenced by the way stakeholder relationships are managed. It also suggests that the implementation and management of sustainable supply chains are context-specific challenges, therefore managerial and policy generalizations are difficult to achieve.	Grounded theory/action research
Betts et al. (2015)	Primary, internal and external, secondary stakeholders, and regulators	Exerting-pressure	The industry type (dynamic vs static industries) moderates the relationship between stakeholder pressure and environmental strategy implementation. Plants in dynamic industries perceive higher level of stakeholder pressures.	Survey data analysis
Gualandris et al. (2015)	NGO, academic institutions, government	Accountability	Stakeholder salience increases inclusivity, scope and disclosure of sustainable evaluation and verification. Furthermore, the technical and relational capability of stakeholder also play a role in the sustainable evaluation and verification. Salient stakeholders can also influence the expected materiality, reliability, accuracy, completeness and responsiveness of a firm by other stakeholders.	Conceptual paper

Gold et al. (2015)	Multi-stakeholder networks: buyers, suppliers, labor unions, government and local enforcement authorities	Collaborative	Multi-stakeholder partnerships, community-center approaches and supplier development programs seem to be effective responsive mechanisms to modern slavery practices.	Conceptual paper
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Source: Elaborated by the author

Scholars in stakeholder management classify stakeholders according to its saliency to the firm (Clarkson, 1995; Donaldson and Preston, 1995; Freeman et al., 2010; Mitchell et al., 1997). They define those salient and related through transactions, power, and legitimacy as primary stakeholders. Primary stakeholders are customers, shareholders, suppliers, government, etc. (Clarkson, 1995). These stakeholders are also named in some papers in SSCM as internal stakeholders (Klassen and Vachon, 2012). On the other hand, those external constituencies who lack formal contractual bond, or exert direct legal authority over the firm but that can influence the firm are considered secondary stakeholders (Clarkson, 1995; Eesley and Lenox, 2006). Some examples of secondary stakeholders are: NGOs, consumer activists, universities, media, etc. These stakeholder are also named external stakeholders in the literature of SSCM (Klassen and Vachon, 2012).

**Figure 2.2: Supply Chain Management and Stakeholders**



Source: Figure adapted from Klassen and Vachon (2012).

Since the knowledge we gained in the 90's about the bullwhip effect on the supply chain operational performance, a collaborative based approach has



become mainstream in SCM (Barratt, 2004). This approach is based on the collaboration-based advantage. It highlights that in an increasingly complex and turbulent environment firms can enhance their performance through strategic collaboration with main stakeholders (i.e. customers, suppliers, competitors) (Hamel et al., 1989; Kanter, 1994; Lado et al., 1997). The collaboration-based advantage paradigm clearly fits with the stakeholder theory.

However, this collaboration-based paradigm has only been applied for relationships with primary stakeholders. For instance, previous studies have found that cooperation with suppliers and customers enhance the sustainability of focal firms (Klassen and Vachon, 2003; Lee and Klassen, 2009; Vachon and Klassen, 2006, 2008). The relationships between firms and their secondary stakeholders (e.g. NGOs, activists, universities) are still studied through the exerting-pressure/accountability view (Parmigiani et al., 2011), where firms undertake environmental or social practices to comply with the requirements from these stakeholders.

Moreover, the cooperative approach between secondary stakeholders and firms is not novel in certain streams of management literature. Scholars in the realm of inter-organizational studies and cross-sector partnerships suggest that this type of partnerships could be beneficial for supply chains because these organizations bring complementary resources which firms do not have access to (Gold et al., 2013; McDonald and Young, 2012; Selsky and Parker, 2005; Wassmer et al., 2012). In this sense, secondary stakeholders allow firms to reach sustainability levels that otherwise could not be possible (Pagell and Shevchenko, 2014). There are examples from several industries, where managers are undertaking cooperative initiatives with secondary stakeholders (e.g. universities, NGOs, etc.). For example, Starbucks has established an alliance with Rainforest Alliance and Conservation international to source organic coffee from central America (Argenti, 2004); similarly, Nespresso, Unilever, and Nestle are working with NGOs in order to include vulnerable farmers into their supply chains (Alvarez et al., 2010; Nestle, 2015; Unilever, 2014). Additionally, firms are also cooperating with universities in R&D partnerships in order to develop green technologies to

enhance its environmental sustainability (Wassmer et al., 2012). Yet, the cooperative approach with secondary stakeholders has been neglected in the SSCM field.

Additionally, prior research suggests that secondary stakeholders, such as NGOs, can improve the social sustainability of supply chains by undertaking initiatives that go beyond the scope and responsibility of economic actors (McDonald and Young, 2012). For instance, Rainforest Alliance has developed schemes that train and certify poor producers to be incorporated into the supply chain. As a result, poor producers have increased their profits, women have obtained access to more labor opportunities, and child labor has decreased (Rainforest Alliance, 2014). Therefore, NGOs are relevant actors that can complement firms in building sustainable supply chains. In this regard, two areas of potential research in socially sustainable supply chains are the cooperative agreements between firms and NGOs; and the mechanisms of value creation of these agreements.

#### **2.1.4. Environmental Innovativeness to Overcome Trade-offs**

The dominant logic of green operations is that environmental excellence drives operational excellence (Corbett and Klassen, 2006; King and Lenox, 2002; Pil and Rothenberg, 2009). In this regard, prior literature on green operations and GSCM suggest that firms with TQM and lean production practices are more likely to adopt environmental management practices, green technologies or practices (Curkovic et al., 2008; King and Lenox, 2001a; Wiengarten and Pagell, 2012). Similarly, other scholars also suggest that best supply chain management practices (e.g.: supplier development, supplier assessment and certification, supplier input for product development, cooperation with customers) have a positive effect on the environmental performance of the focal firm (Ciliberti et al., 2008, 2011; Gimenez and Tachizawa, 2012; Miemczyk et al., 2012; Schneider and Wallenburg, 2012). However, this set of practices have been criticized because they only focus on low-hanging fruits; they only address environmental issues as long as they do not hurt economic performance (Montabon et al., 2016; Pagell and Shevchenko, 2014). Alternatively, further

environmental improvement requires investment in technology and knowledge acquisition to bring radical changes and reengineering of existing processes, situations which can hurt the short-term economic performance. Consequently, more research is needed on the antecedents and the development of firm-level environmental innovation.

Environmental innovation is defined as “the production, assimilation or exploitation of a product, production process, service or management or business methods that is novel to the firm (or organization) and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives” (Kemp and Pearson, 2007, p. 10). Environmental innovation is systemic, and complex because it entails changes of business processes, products portfolio, organizational structures, and the creation or adoption of expensive and high-uncertainty technology (Rennings, 2000). Compared to economic innovation, it is more difficult to capture economic value from environmental innovation because the cost of adopting environmental innovations is lower for late adopters than early adopters. In this sense, managers have no incentives to initiate environmental innovation projects (Rennings, 2000).

Furthermore, innovation differs from innovativeness. Innovation is the iterative process of developing inventions that respond to market opportunities and at the same time are successfully produced and commercialized (Garcia and Calantone, 2002). On the other hand, innovativeness refers to the firm’s capability to adopt new ideas that lead to the development of new products, processes, or organizational procedures. In this sense, innovativeness precedes innovation (Hurley and Hult, 1998; Tsai and Yang, 2013). However, previous research use the concepts of environmental innovation and innovativeness interchangeably (Cainelli et al., 2012, 2015). Additionally, most studies on environmental innovation focus on the characteristics that make environmental innovators different from non-environmental innovators (Ghisetti and Pontoni, 2015; Ghisetti and Rennings, 2014), but has been little observed how firms could develop environmental innovativeness capability.

In addition, it is also suggested that firms possess little knowledge on the activities required to perform environmental innovation (Hall and Clark, 2003; Rennings, 2000), while scientific organizations (i.e. universities and public research institutes) possess highly specialized human capital, distant and different knowledge from industry, and the capability and time to developing costly technology with longer time-to-market (Agrawal, 2001; Baba et al., 2009). In this regard, it has been found that cooperation with scientific organizations fosters firm-level environmental innovation (Ghisetti et al., 2015; Horbach et al., 2013; De Marchi, 2012). Yet, there is little research about how innovation resources, such as knowledge from scientific organizations, are deployed within the firm to develop environmental innovativeness capability.

## **2.2. Research Questions and Contributions**

In the prior section, we discussed that the field of SSCM needs more research about cooperative initiatives between firms and secondary stakeholders to create value. Consequently, the overall topic of this thesis is the study of cooperative relationships between firms and their secondary stakeholders to create value in instances with no foreseen synergies between economic and social performance, and between economic and environmental performance. Specifically, the thesis focuses on the relationship between firms and NGOs for creating value through poverty alleviation; and on the relationships between firms, universities, and public research institutions for developing the firm's environmental innovativeness capability.

Poverty alleviation is a complex subject that requires the cooperation between organizations from several sectors (i.e. government, civil society organizations and firms). In this regard, previous research suggests that firm-NGO cooperative initiatives are useful mechanisms to alleviate poverty (Hahn, 2009; London et al., 2010). However, NGOs and firms have different sets of values, missions, and organizational structures (Berger et al., 2004). Hence the inter-organizational alignment between the firm and the NGO is critical to undertake such initiatives. Consequently, one of the research questions of this thesis is: how do firms and NGOs achieve inter-

organizational fit to undertake cooperative initiatives that create value in socially sustainable supply chains? (See Table 2.2).

Furthermore, poverty alleviation is a topic of concern for managers because raw materials are mostly sourced from developing economies where a large part of suppliers are vulnerable of economic exclusion (e.g. women and minority groups), or modern slavery (e.g. sweatshops, child labor, etc.) (Gold et al., 2013; Hahn and Gold, 2014; Hahn, 2009). Similarly, NGOs are concerned with the development of poor smallholder farmers and their integration into supply chains, but it is unknown how NGOs could undertake such supply management practices. Hence, the second article of this thesis explores how NGOs use supply management practices to alleviate poverty. More specifically, the research questions are the following: 1) What resources do NGOs use when they undertake supply-management practices for poverty alleviation? And 2) what firm resources do NGOs seek when they undertake supply-management practices for poverty alleviation?

It was said that firms can overcome the economic-environmental trade-off through environmental innovation. There is ample literature which identify the differences between environmental innovators and non-environmental innovators (Cainelli et al., 2015; Cuerva et al., 2014; Horbach, 2008). Yet, it is unknown the firm's capability behind environmental innovations, and how firms develop it. The third paper of the thesis focuses on how firms develop environmental innovativeness capability. To do so, it proposes a theoretical framework which relates innovation resources with process innovativeness and environmental innovativeness. Consequently, the research question of the third paper is the following: Does process innovativeness mediate the relationship between innovation resources, knowledge brought in from stakeholder relationships, and environmental innovativeness?

The three papers of the thesis study cooperative relationships between firms and their secondary stakeholders to create value in instances with no foreseen synergies between economic and social performance, and between economic and environmental performance. It makes the case for studying

firms-stakeholders' relationships from a cooperative view. Hence, managers can cope with external pressure, and create value through the collaboration with secondary stakeholders. Furthermore, the thesis contributes to the literature of SSCM in the following manners: a) It provides a process model of how firms and NGOs overcome their differences to undertake value-creation initiatives; b) it provides a theoretical framework which identifies the resources that NGOs should develop and search within firms to implement supplier development programs that alleviate poverty; c) it deductively develops and tests a model explaining that environmental innovativeness capability is the result of a two-sequenced bundlings, first innovation resources are bundled into process innovativeness, then process innovativeness is extended and bundled with the knowledge from R&D cooperation with public research institutions to develop environmental innovativeness (see Table 2.2).

**Table 2.2: Synthesis of Research Gaps and Research Questions of the Thesis**

<b>Title of the paper</b>	<b>Research gap</b>	<b>Research questions</b>	<b>Theoretical contribution</b>
Cooperative initiatives with NGOs in socially sustainable supply chains: How is inter-organizational fit achieved?	Although the potential for value creation between firms and NGOs, there is little knowledge on how firms and NGOs overcome their organizational difference to cooperate.	I. How do firms and NGOs achieve inter-organizational fit to undertake cooperative initiatives that create value in socially sustainable supply chains?	This paper presents a theoretical framework that conceptualizes the process of achieving inter-organizational fit; and depicts its drivers and enablers. It helps practitioners to manage proactively their stakeholder relationships and improve our understanding about how firms and secondary stakeholders overcome their organizational differences.
NGOs' initiatives to enhance social sustainability in the supply chain: Poverty alleviation through supplier development programs	Previous literature acknowledges that firms and NGOs could complement each other when implementing socially sustainable supply management practices, but how NGOs develop and implement such initiatives in collaboration with firms has been understudied.	II. What resources do NGOs use when they undertake supply-management practices for poverty alleviation? III. What firm resources do NGOs seek when they undertake supply-management practices for poverty alleviation?	It provides a framework, which posits that some NGO-resources (e.g. the knowledge for localizing the SD program and the bridging capability) are critical for designing and setting up the SD program. These resources are complimented by some firm's resources (knowledge transfer routines, logistical resources, and relational contracting based on procedural fairness).
Environmental innovation is a process, not a destination: The mediating effect of process innovativeness on environmental innovativeness	Most literature has focused on the factors that make different environmentally innovative firms from non-environmentally innovative firms. But, how these innovative firms develop their environmental innovativeness has been overlooked.	IV. Does process innovativeness mediate the relationship between R&D resources, stakeholder relationships, and environmental innovativeness?	Environmental innovativeness is developed through the bundling of process innovativeness and the resources brought from the cooperation with public research institutions. Additionally, internal R&D, external R&D, acquisition of machinery, and cooperation with suppliers for innovation are bundled into process innovativeness.

Source: Elaborated by the author.

### **2.3. Research Methods**

The thesis has two types of research questions: theory building research questions and theory testing research questions (Colquitt and Zapata-Phelan, 2007). A theory is a systematic explanation of a particular set of empirical phenomena, which makes predictions about the specified phenomenon, and is formulated in a way that can be falsifiable and those predictions are contrasted with reality (Shapira, 2011). Theory can be developed analytically and empirically (Wacker, 1998). The analytical approach uses deductive methods to arrive to theory, methods such as: mathematical or logical deduction. On the other hand, the empirical approach uses inductive methods such as: experiments, statistical research, and case studies. Table 2.2 synthesizes the research questions of the thesis. Questions 1 to 3 are theory building ones, while question 4 is a theory testing one.

The literature on theory building in management science suggests that no matter which method is applied, the work should be guided by previous literature and with a well-established research question (Eisenhardt, 1989; Siggelkow, 2007; Voss et al., 2002; Wacker, 1998). In this regard, the theory building research questions are focused on the specific phenomena of inter-organizational fit and on the identification of resources that allow partnerships between firms and NGOs to alleviate poverty through SD programs. These research phenomena are anchored on the literature of SSCM and cross-sector partnerships. Additionally, since the phenomenon of collaborative initiatives with secondary stakeholders is nascent, we use an inductive case study to develop the theory. We chose a case study approach because it is a methodology that facilitates the broad and deep data collection of phenomenon within the reality of the unit of analysis; and allows the collection of both qualitative and quantitative data (Gibbert and Ruigrok, 2010; Yin, 2013).

Regarding the theory testing research question, we follow a logical deductive process (Wacker, 1998). We analyzed the findings from continuous improvement literature and the literature of environmental innovation to frame the problem of environmental innovativeness. Then, since the



phenomenon of study is a firm's capability, we also analyze the literature on firm's capabilities and organizational routines. Through this exercise we found the theoretical framework proposed by Sirmon et al. (2007). This framework conceptualized how capabilities are created from organizational resources. Consequently, through the lenses of this framework we propose hypotheses about the relationships between innovation resources, process innovativeness, and environmental innovativeness. Finally, we use secondary data (i.e. it is survey data, but we did not collect the data) to test the hypotheses through a mediation statistical model.

In summary, the thesis uses both theory building and theory testing approaches. In this regard, the thesis provides two types of theoretical contributions. First, it develops theory about the process of inter-organizational fit between firms and NGOs for creating value in SSCM. It also develops theory about the resources that NGOs need to develop and to search among firms to undertake supplier development programs that alleviate poverty. Finally, the thesis provides empirical validation for the application of the resource management framework to the development of the environmental innovativeness capability.



## Chapter 3. Cooperative Initiatives with NGOs in Socially Sustainable Supply Chains: How is Inter-Organizational Fit Achieved?<sup>1</sup>

### Abstract

This research studies how firms and NGOs achieve inter-organizational fit for implementing practices that create value in socially sustainable supply chains. This paper presents a theoretical framework that identifies the factors that drive and enable firm-NGO inter-organizational fit. Previous research has adopted an institutional or accountability-based perspective to study the relationships between firms and their secondary stakeholders. However, anecdotal evidence and latest industry practices suggest that a cooperative perspective could be more appropriate to understand how value can be created in socially sustainable supply chains. The proposed theoretical framework depicts the achievement of inter-organizational fit as a process that entails several alignments along the way: a value logic alignment, which includes the private sector as relevant source of value for the NGO; the alignment of NGO's mission with profit-oriented behavior of firms; the alignment between NGO's and firm's strategies; and the adjustment of firm's organizational structures to NGO's activities. An inductive qualitative nested case study was used where a NGO designed a project to undertake supplier development programs for poor suppliers in cooperation with several firms. Recommendations for practitioners and areas of future research are also provided.

**Keywords:** socially sustainable supply chains; inter-organizational relationships; firm-NGO cooperation; inter-organizational fit

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<sup>1</sup> Rodriguez, J.A. Gimenez, C., Arenas, D. (2016) "Cooperative Initiatives with NGOs in Socially Sustainable Supply Chains: How is Inter-Organizational Fit Achieved?" *Under Review*

### **3.1. Introduction**

The relationships between firms and some of their secondary stakeholders have evolved from an exerting-pressure one where firms were pushed to change their practices and behaviors, to a cooperative one which seeks the implementation of joint initiatives (Arenas et al., 2013; Argenti, 2004). Previous studies in sustainable supply chain management (SSCM) have concluded that secondary stakeholders' pressure foster the development of socially and environmentally sustainable practices (Delmas, 2001; Pullman et al., 2009; Sarkis, Gonzalez-Torre, et al., 2010). Both academic and professional publications, however, acknowledge the importance of a cooperative approach between firms and secondary stakeholders (such as NGOs, governmental agencies, universities, and civil society organizations in general) (Austin, 2000; Dahan et al., 2010). For instance, multi-stakeholders initiatives, where firms, governments and NGOs cooperate in the development of industry standards, are becoming more salient (e.g. Marine Stewardship Council) (Cummins, 2004). Moreover, firm-NGO alliances are another type of inter-organizational cooperation—which is also appearing with more frequency—that promote sustainable practices along the supply chain. For instance Rainforest alliance is collaborating with several firms (e.g. Unilever, Nestle, etc.) in the certification of suppliers to improve the sustainability of the supply chain in the food and beverage industries (Rainforest Alliance, 2014).

Stakeholder theory distinguishes between primary and secondary stakeholders. Primary stakeholders are customers, suppliers, financiers, employees, stockholders, etc., while secondary stakeholders are government, media, consumer advocate groups, NGOs, etc. (Freeman et al., 2010). Previous studies on SSCM have studied the relationship between firms and primary stakeholders as cooperatives, finding that this type of relationships improve firms' triple bottom line (Gimenez and Tachizawa, 2012; Klassen and Vachon, 2003); but the relationships with secondary stakeholders from a cooperative view has received scant attention (Ashby et al., 2012; Gimenez and Tachizawa, 2012). Cross sector partnerships literature, however, suggests that partnerships with NGOs enhance corporate social responsibility and

social sustainability within the supply chain (McDonald and Young, 2012), because they bring resources (e.g. knowledge, social capital) that allow the creation of value (Austin and Seitanidi, 2012). Consequently prior research suggests that firm-NGOs relationship is a critical phenomenon to better understand socially sustainable supply chains (Pagell and Shevchenko, 2014; Pagell and Wu, 2009). We follow this suggestion and focus on firm-NGO partnerships for the creation of value in socially sustainable supply chains.

A socially sustainable firm is one that makes profits without harming society (Carter and Rogers, 2008). When social sustainability is viewed from a supply chain perspective, it means the management of processes and stakeholders in order to enhance the social justice and the equity along the supply chain (Pullman et al., 2009; Sarkis, Helms, et al., 2010). This entails that managers have to deal with complex issues that are external to the firm and that managers are untrained to manage (e.g. poverty alleviation, child labor, human trafficking, etc.). On the other hand, NGOs have more experience on these aspects, and are better suited to manage them. In this sense, firms and NGOs could complement each other in the implementation of projects that foster social sustainability (Selsky and Parker, 2005).

Although there is potential for value creation in firm-NGO relationships, this type of relationships are complex to implement because of the organizational differences between both organizations (Berger et al., 2004). Both firms and NGOs have different organizational cultures, missions, and perspectives about the definition of value (Le Ber and Branzei, 2010). For instance, NGOs are oriented toward the creation of social value, the pursuit of societal betterment through the removal of barriers that hinder social inclusion, and the mitigation of undesirable side effects of economic activity (Austin et al., 2006), whereas firms are oriented toward the creation of economic value. Consequently, previous research suggests that the alignment between strategies, organizational structures, and values of both organizations is a major challenge to undertake firm-NGO partnerships (Austin and Seitanidi, 2012). Within a context of socially sustainable supply chains, this paper answer the following research question: how do firms and

NGOs achieve inter-organizational fit to undertake cooperative initiatives that create value in socially sustainable supply chains?

To address the research question, we use a nested case study that entails a project started by a NGO with six firms. The unit of analysis is the firm-NGO relationship, then we observed six unit of analysis. This paper contributes to the literature of SSCM by improving our understanding of cooperative relationships between firms and their secondary stakeholders in socially sustainable supply chains. The proposed theoretical framework depicts the achievement of inter-organizational fit as a process that entails several alignments along the way: a value logic alignment, which includes the private sector as relevant source of value for the NGO; the alignment of NGO's mission with profit-oriented behavior of firms; the alignment between NGO's and firm's strategies; and the adjustment of firm's organizational structures to NGO's activities. The factors that enable this process operate at several levels of analysis: network level, organizational level, dyadic level, and individual level. In this sense, this paper will help practitioners to manage their stakeholder relationships to create value in socially sustainable supply chains.

The remaining of the paper is structured in the following way. First, the literature review section presents a summary of the arguments that support our research design. Then, we explain how data was collected and justify why we chose a case study approach. After that, we describe the theoretical framework that emerged from our analysis. Then, we discuss how our theoretical framework contributes to existing literature. Finally, we offer some conclusions for future research and practitioners.

## **3.2. Literature Review**

The literature review contains two parts. In the first part we describe the concept of social sustainability within the context of supply chains. Then, in the second part we describe previous studies about inter-organizational relationships in the realm of socially sustainable supply chains.

### 3.2.1. Socially Sustainable Supply Chains

SSCM is defined as “the strategic, transparent integration and achievement of an organization’s social, environmental, and economic goals in the systemic coordination of key inter-organizational business processes for improving the long-term economic performance of the individual company and its supply chains” (Carter and Rogers, 2008, p. 368). Following this definition, socially supply chain entails the compliance with ethical values (i.e. human rights, justice, and moral principles), the accountability of the negative impacts on society, and the undertaking of initiatives that develop local communities, and integrate vulnerable people (e.g. minorities, poor people, women, etc.) (Gimenez et al., 2012; Pullman et al., 2009). Examples of socially sustainable practices include, but are not restricted to: industry codes of conducts, labor certification and audits of suppliers, supplier development programs for poor suppliers, fair-trade initiatives, and welfare & safety programs for employees (Pagell and Wu, 2009; Tate et al., 2010).

Social sustainability is often confused with corporate social responsibility (CSR) (Ashby et al., 2012). CSR and social sustainability share the dimensions of value creation, balance of stakeholder interests, and accountability. The concept of CSR emphasizes more the dimension of accountability, while sustainability emphasizes more the value creation and balance (Schwartz and Carroll, 2008). Furthermore, the concept of CSR is broader; it includes causes that go beyond the supply chain (e.g. AIDS, work-life balance, etc.) (Carroll, 1999). Additionally, the concept of value is also a nuanced one in the context of social sustainability. There is value creation in socially sustainable supply chains when economic and social value are created (Carter and Rogers, 2008). Economic value is profit, while social value is defined as “the pursuit of societal betterment through the removal of barriers that hinder social inclusion, the assistance of those temporarily weakened or lacking a voice, and the mitigation of undesirable side effects of economic activity” (Austin et al., 2006, p. 264). In this sense, we refer to value in this research to the joint creation of economic and social value.

### **3.2.2. Cooperative Inter-Organizational Relationships in Socially Sustainable Supply Chains**

Previous research supports the idea that cooperative inter-organizational relationships with stakeholders enhance the sustainability of supply chains. Stakeholders provide resources (knowledge, social capital, etc.) that allow firms to reach goals that otherwise would be impossible (Gimenez and Tachizawa, 2012; Vachon and Klassen, 2006). Yet this cooperative logic is only applied to primary stakeholders. The relationships with secondary stakeholders have been studied from an institutional logic that depict secondary stakeholders as instigators (Parmigiani et al., 2011; Shafiq et al., 2014). Furthermore, it is also argued that firms cooperate with primary stakeholders because of pressure from secondary stakeholders (Parmigiani et al., 2011; Tate et al., 2010). For instance, firms are cooperating with their suppliers and customers to implement industry codes of conduct to enhance labor standards, safety and employees' welfare, etc. (Ciliberti et al., 2011).

There are firms, however, that establish cooperative relationships with secondary stakeholders to create value in socially sustainable supply chains. For instance, Nespresso and Rainforest alliance have worked together to develop industry standards to improve the quality of coffee harvested by poor farmers in Latin America. As a result of this standard, these farmers have improved their economic conditions (Alvarez et al., 2010). Unilever has also developed a cooperative relationship with Rainforest alliance to improve the quality of the products and the economic conditions of poor tea farmers in Africa (Lipton, 2015). These events suggest that depicting secondary stakeholders only as instigators might be inaccurate. Also, previous conceptual work on stakeholder relationships supports this anecdotal evidence, suggesting that cooperative relationships between firms and secondary stakeholders could create new opportunities for value creation (Freeman et al., 2010).

Considering the literature of cross-sector partnerships, the relationship between firms and secondary stakeholders for value creation is not novel (Selsky and Parker, 2005). Cross-sector partnerships are defined as



“voluntary working arrangements between for-profit and not-for-profit organizations which involve the deliberate exchange, sharing or co-development of products, technologies or services that address an unmet need for a specific segment of society” (Le Ber and Branzei, 2010, p. 601). The central idea of cross-sector partnerships is that firms and secondary stakeholders combine their unique resources to create value (Arenas et al., 2013; Selsky and Parker, 2005). This idea has also been suggested in SSCM literature, but for the specific case of NGOs; this idea suggests that NGOs have distinctive resources that can complement firms to improve social sustainability (McDonald and Young, 2012).

To combine their resources, however, firms and NGOs need to align themselves because they usually have different organizational characteristics, goals, values, cultures, strategies, management styles, and operating approaches (Austin and Seitanidi, 2012). For example, NGOs are based more on process and principles, while firms are focused on products and profits; firms’ managers are unfamiliar with the politics of a cause, while NGO staff is unfamiliar with how businesses are run (Berger et al., 2004). Consequently, the implementation of firms-NGOs cooperative relationships requires inter-organizational fit between both organizations (Austin and Seitanidi, 2012).

The concept of fit comes from contingency theory and explains that organizations who match its structure (i.e. organizational form, technology, and routines) with the environment have higher performance (Siggelkow, 2001). Furthermore, organizational scholars, from a system perspective, also argue that a firm has high degree of internal fit when many of its organizational elements reinforce each other (Siggelkow, 2001). From this point of view, the degree of congruence between strategy, structure and technology is an evidence of high fit among the elements of an organization (Siggelkow, 2001). On the other hand, the literature of cross-sector partnerships defines fit within a partnership as the congruence in their respective perceptions, interests, and strategic direction (Austin and Seitanidi, 2012). Prior research in cross-sector partnerships has mainly focused on the fit between the micro-elements (i.e. values, resources, etc.) of the partnership (Le Ber and Branzei, 2010; Berger et al., 2004; Murphy et al., 2014).

Considering the system and cross-sector partnerships perspectives, we define fit as a dynamic process that entails the congruence between strategy, structure, technology, and values; and it is influenced by institutional pressures. This conceptualization allows us to understand better how internal factors of the firm-NGO partnership are aligned and how environmental factors push them to converge.

### **3.3. Methods**

Firm-NGO partnerships are a phenomenon that have few instances of observations, but that we expect to see more often in the future. Furthermore, since our understanding of the alignment of inter-organizational processes of both organizations in supply chains is still scarce, an inductive qualitative approach that takes a close, detailed and thorough view is useful to shed light on this phenomenon. Consequently, we choose a qualitative case study because it allows us to take a broad and profound view on the contextual factors that foster or inhibit the inter-organizational alignment of firms and NGOs in socially sustainable supply chain practices.

#### **3.3.1. Case Selection**

We study a NGO-led international project whose objective was to improve the economic situation of poor suppliers through supplier development programs. The project was implemented in Ecuador, Peru, Guatemala, and El Salvador. Since the focus of the research was on the NGO-firm level, the research was designed to gather data about the organizational and inter-organizational factors that enhanced or inhibited the inter-organizational fit. Additionally, country-level aspects such as national culture, industrial dynamics and institutional pressures could have distracted us from the inter-organizational nature of the phenomenon and weaken the internal validity of the findings. Consequently, we only focused on one country, and chose Ecuador because the participating firms in the project came from different industries (i.e. steel and furniture manufacturing, and agribusinesses), had different size, and organizational structures; which

allowed us to have high variation on the organizational factors of the phenomenon of study.

Nine firms participated in the project in Ecuador: seven firms participated in initiatives where poor suppliers were integrated through supplier development programs, and the remaining two consisted in distribution channel or market oriented initiatives. We focused on the seven firms, because our research targets initiatives where poor people are integrated through supplier development programs. From these seven firm-NGO initiatives, we could only obtain triangulated data from six instances. However, data collected from the side of the NGO on the seventh instance suggested that there wasn't anything new for the analysis. Consequently, the case study has a nested structure of three levels of analysis. It has NGO-level organizational factors, which could be seen as a sort of within-case analysis; firm-level organizational factors, and NGO-firm inter-organizational factors, which could be seen as a sort of between-case analysis. Therefore, we could contrast instances of high against low inter-organizational fit, and build a theoretical framework about the NGO's and firms' organizational factors that lead toward an inter-organizational fit in firm-NGO partnerships for value creation.

### **3.3.2. Data Collection**

Data collection started in December 2011 and finished in July 2013. But the project happened in the past, between 2007 and 2011, so we had to gather the data retrospectively. To design the case study protocol, we used social capital theory and the relational view, two main theories in the literatures of cross-sector partnerships and SSCM (Selsky and Parker, 2005; Touboulic and Walker, 2015) (see Appendix 1). This protocol enhanced the reliability of data collection because it focused the research on specific aspects of the project such as: the NGO's antecedents for collaborating, the relational aspects between the NGO and the firms, and the transactions between the firms and the suppliers (Yin, 2013). However, for this research we only used data about the interaction between the NGO and the firms prior the transaction between firms and suppliers.

We gathered the data through semi-structured interviews and from secondary sources of data. The main secondary sources were the reports from both the NGO and the firms, newspapers, and information on websites. For the interviews one of the authors travelled to Ecuador and met the managers of the firms and the representatives of the NGO. When further information was required for clarifying or extending an issue about the project, we arranged interviews through videoconferences and phone calls. Additionally, we interviewed people from both the NGO and firms, who made decisions along the life cycle of the project. So, we interviewed 18 people among CSR directors, purchasing managers, CEOs from the firms' side; directors, project managers, and advisors from the NGO side. Finally, for each instance we assured to have data from both the NGO and the firm. In this regard, we only analyzed triangulated data (Yin, 2013).

### **3.3.3. Research setting**

The NGO is a global organization present in Latin America, Africa, and Asia; and focuses on projects that aim to improve the income and welfare of poor people. These projects are funded by governmental agencies, development organizations, and multilateral banks. Through its projects the NGO engages with poor people, supports them to improve their skills and entrepreneurial orientation so they can sell their products in the market. But, few years before the project, the NGO shifted its paradigm of executing projects. From working only with people in rural villages, the NGO started to collaborate with firms, so they could connect poor suppliers with buyers, and also integrate poor people with established markets.

The NGO shifted its paradigm since the collaboration with a business council, with whom they started initiatives to integrate poor farmers into milk and corn supply chains. This collaboration was important because the NGO could learn about firms' operations, got exposed to firms' culture, and identified mechanisms for integrating poor suppliers into supply chains. Few years later, a Latin American multilateral bank funded the NGO to start a project to implement supplier development programs with poor suppliers. The project had to be implemented in cooperation with firms, who had to

contribute with the 60% of the total cost of the supplier development program, while the remaining 40% was funded by the bank. Hence, the NGO had to search firms and ask managers to participate in the project. Finally, the firms who joined the project were the ones that presumably could satisfy its long-term sourcing needs through transactions with poor suppliers. In this regard, our sample has variation in terms of firms' size, industry of origin, and type of suppliers (see Table 3.1), although suppliers averaged 5 dollars per capita of income a day (adjusted by PPP).

**Table 3.1: Description of the Observed Instances in the Case Study**

<b>NGO-Firm Dyad</b>	<i>Large agribusiness</i>	<i>SME agribusiness</i>	<i>Large manufacturer</i>	<i>Large retailer</i>	<i>SME manufacturer</i>	<i>SME agri-manufacturer</i>
<b>Firm's main business activity</b>	The firm is an agri-industrial one; they produce animals (pig, cow, poultry, tilapia) and agricultural canned products	This firm is a gourmet cheese manufacturer. They outsource all the milk for their production process.	The firm is a steel manufacturer. They melt metal scrap to obtain steel billets.	The firm operates a chain of department stores, including food, electronic appliances, clothing, etc.	The firm is a furniture manufacturer. They manufacture furniture for bedroom, dining-, living rooms, and cabinets for kitchen.	The firm elaborates palm tree oil, which is commercialized to soap and margarine manufacturers.
<b>Firm's size ( Sales USD million)</b>	649	17	160	1400	28	77
<b>Supplier's description</b>	Corn farmers with less than 2 ha of production within 50km distance of a local production facility. Corn was a critical item since it was the base of animals' diets.	Cooperatives of small milk farmers. Milk was the main item for firm's production process	Metal scrap collectors who were willing to establish collection centers. Given import restrictions, local sources of scrap was critical for securing long-term supply	Potato farmers with less than 2 Ha. of production. Potato was not critical since it was a small fraction of that product's category.	Small workshops (max 15 employees) close to main firm's factory. Workshops manufactured wood pieces and textile parts for furniture. Purchased items were still manufactured by the firm	Small palm-tree farmers between 2 and 10 Ha. that were close to production facilities.
<b>Total investment in the project (USD thousands)</b>	400	128	110	92	65	18

**Table 3.1 continues**

<b>NGO-Firm Dyad</b>	<i>Large agribusiness</i>	<i>SME agribusiness</i>	<i>Large manufacturer</i>	<i>Large retailer</i>	<i>SME manufacturer</i>	<i>SME agri-manufacturer</i>
<b>Project's objectives</b>	The objective of the project was to increase the local base of suppliers	The objective was to increase the local base of suppliers	The objective was to improve managerial skills of collection centers' managers	The objective was to improve the quality of the product sourced from local farmers	The objective was to improve the quality of the products from local suppliers	The objective was to increase the local base of suppliers

Source: Elaborated by the author.

### **3.3.4. Data Analysis**

Two types of data analysis were performed: the within-case analysis, and the cross-instance analysis (Yin, 2013). In the within-case phase we analyzed independently each NGO-firm interaction in the following way: First, we wrote thick descriptions of the engagement process between the NGO and the firm. This included issues related to the antecedents of the project, communication between members of both the NGO and the firms, and joint efforts to design and implement the supplier development programs. Second, to make sense of the sequence of the description we summarized the description of each NGO-firm interaction into stages conducive toward inter-organizational fit. Third, we analyzed whether the steps of evolution toward fit were similar across NGO-firms interactions. In this way we could observe that the contrasted evolution across instances was the following: adjustment of NGO's value logic, alignment of NGO's mission to firm's profit-oriented behavior, alignment of NGO's project objectives to firm's strategy, and inter-organizational fit.

Then, we classified all the data gathered into the contrasted categories of evolution (i.e. interviews' transcripts, reports, field notes, etc.). For instance, extracts of an interview about the identification of critical items and long-term sourcing needs were categorized as alignment of NGO's project objective to firm's strategy. Next, within each category we coded the classified data into drivers or enablers, where drivers are factors that motivate an event to begin, and enablers are factors that assist or support the development of the process (Lee and Klassen, 2009). The codes were generated based on a review of the literature of SSCM and cross-sector partnerships. The classification of data and coding were performed in the software NVIVO, which allowed us to have a database of the information gathered. Additionally, two researchers coded the data independently, when there were disagreements sense-making workshops were organized. These workshops were led by a third researcher, where there were discussions on the coding until a consensus was reached. Finally, we analyzed the patterns between the drivers, enablers and categories across the instances of NGO-



firms and as a result we constructed a network of links between drivers, enablers and categories.

Value logic is the organizing principle of an organization that allows its members to distinguish between what is valuable from what it is not in the institutional setup of a field (Le Ber and Branzei, 2010). For instance, prior to lean philosophy inventories were considered valuable within a production system, now they are perceived as a type of waste. In this same line, the value logic alignment is operationalized through the change in the perception that NGOs had about the role of the private sector in poverty alleviation. Mission alignment refers to the objectives alignment of both the NGO and firms. It refers to the process through which the NGO adjusted its poverty alleviation mission with the profit-oriented behavior of firms. The alignment between NGO's and firm's strategies was operationalized as the alignment between the project's objectives with the sourcing needs of the firm. Since we only observed firms that participated in the project, all of them had high strategic fit.

Additionally, inter-organizational fit was operationalized at the operational firm-NGO level. Following prior work on organizational fit (Siggelkow, 2001, 2002), we operationalized firm-NGO inter-organizational fit through two indicators: 1) the alignment of the activities of the project with the organizational structure (i.e. centralization, job specialization, chain of command, etc.) of the functional department that was assigned to work in the project; and 2) the alignment of the activities of the project with the organizational routines within the functional department, for instance how the processes that support the achievement of department's goals were compatible with the NGO's project. Consequently, inter-organizational fit was high when both indicators were congruent with the project; it was medium when only one element was achieved (this was not observed in the case); and it was low when none of the indicators were observed (see Table 3.2).

In summary, we addressed construct validity through the use of multiple sources of evidence, and the construction of a chain of evidence. Internal validity was ensured through the use of pattern matching data analysis, and addressing rival explanations in the interpretations. External validity was addressed through analytic generalizations and replication logic in our interpretations. For instance, the emerged patterns shed light on theoretical aspects about the alignment of NGO-firms value logic proposition, strategies, and organizational structures; and our interpretations were based on diverse theoretical properties such as: different firm sizes, industry, and supply chains. Finally, we assured reliability through the use of a case study protocol for data collection, the use of a case study database, and the coding and interpretations made by several researchers.

**Table 3.2: Definition of the Concepts Emerged from the Analysis**

<b>Concepts</b>	<b>Definitions</b>
Value logic alignment	It refers to the change in NGO's perception about the role played by the private sector in the creation of value. It entails the realization that creating value for other stakeholders is compatible with profit-oriented behavior. However, it does not mean that the NGO had to change its mission.
NGO's mission alignment	It refers to the change in the way the NGO approaches its projects. The NGO had moved from a philanthropy approach to one which harmonizes profits with value creation. In this sense, there is compatibility between NGO's objectives and profit-oriented behavior.
NGO structural social capital	It refers to the social network resources that the NGO could access through its partnership with the business council. It entails the contacts made in the past, and the pool of firms that can be accessed due to past references.
NGO's staff boundary spanning capabilities	It refers to the individual abilities of NGO's representatives to deal with both business and NGO related aspects. It entails two aspects: (1) professional knowledge about business processes and supply markets; and (2) skills to communicate with managers.
NGO's and firm's strategies alignment	It refers to the alignment between poverty alleviation objective and the long-term sourcing objectives of the firm. Strategies' alignment occurred when firms and NGO were able to start an initiative that met the objectives of both organizations (social value and profits).
Inter-Organizational Fit	It refers to the alignment between (a) the organizational structure and department's organizational routines; and (b) the activities entailed in the project. Inter-organizational fit is a dyadic construct observed at the tactical level.
Purchasing function's specialization	It refers to the specialization of tasks of the department in charge of the planning and implementation of the project. A purchasing department that manages fewer items is more specialized.
Routines that support collaborative relationships	It refers to the existence of organizational processes that support the collaboration of the firm with its suppliers. It entails activities of assessment and collaboration with the supply base.
Resource combination	It refers to the allocation of resources from both NGO and firms for the planning and implementation of the project. Resource combination is higher when firms allocate non-monetary resources for the project in addition to monetary resources.

Source: Elaborated by the Author.

### **3.4. Results**

The results are presented in four parts: first, we describe how the adjustment of value logic was achieved; second, we describe how the alignment between the missions of both organizations was achieved; third, we describe the alignment between the NGO's project objective and the firms' strategy; fourth, we finish with the description of how the previous parts are related with the achievement of inter-organizational fit. Finally, we conclude describing how inter-organizational fit is related to the likelihood of resource combination in firm-NGO partnerships.

#### **3.4.1. Adjustment of the NGO's Value Logic Proposition**

The process began when the NGO rethought the role of the private sector in poverty alleviation initiatives. The NGO had worked in food supply chains with farmers' associations to increase their productivity, improve the quality of their products, and strengthen their organization so they could better negotiate their products, but they had not collaborated with any firm in these initiatives. The NGO changed its perception about the private sector when they realized that firms could provide a more reliable access to market for poor suppliers. This change supposed a shift in the paradigm of how projects were framed. From poverty alleviation initiatives, they became business initiatives that improved poor suppliers' economic conditions.

The idea of collaborating with the private sector, however, caused an internal tension in the NGO. There was high uncertainty whether working with the private sector would generate a positive impact for poor suppliers. There was distrust to this idea because of the differences in the interest and objectives of both the NGO and the firm. Two external forces, however, drove the NGO to change: the need to access different sources of funding, and the complexity inherent in poverty alleviation.

The NGO's major source of funding was an endowment granted by the national government of a European country. However, due to a reduction in the expenses of this government, the NGO's endowment was also expected to be reduced. Furthermore, this situation was exacerbated by the complexity

of achieving their mission; they had to deal with a complex issue with fewer resources. The NGO responded to this situation by adjusting the mechanisms to achieve its mission. They saw the private sector as an access to new resources to achieve their mission. Consequently, the NGO changed its value logic about the mechanisms for poverty alleviation.

The cooperation with a business council resulted critical for the adjustment of the NGO value logic. The NGO and the council elaborated the concept of inclusive business models, defined as business initiatives that improved the economic condition of poor people. The cooperation entailed the organization of workshops with firms, members of the council, to introduce inclusive business to managers. After that, the NGO and the business council funded some pilot projects with few firms to test the feasibility of the inclusive business models. The results of the pilot initiatives were positive, consequently the NGO gained confidence on this new mechanism to achieve its mission. A representative of the NGO told us:

“So we developed this inclusive business model with them [the business council]; [where the] private sector contributed to poverty reduction and contributed to be more inclusive; on making more inclusive formal economic processes and involving poor people in their value chains. That’s where the story started... we think there is a huge potential for inclusion through the private sector.” *Regional Director of the NGO*

Therefore, we interpret the process of value logic adjustment as one where the NGO changed its vision about the mechanisms to achieve poverty alleviation. From being an antagonistic actor, the private sector became instrumental for poverty alleviation. This situation harmonized the view of social value with making profits, and allowed the NGO to access new possibilities of value creation (see Table 3.2).

### **3.4.2. Aligning the NGO's Missions to the Profit-Oriented Behavior of Firms**

After realizing the value creation opportunities of cooperating with the private sector, the NGO planned the project that received funding from a multilateral bank. Although the NGO had adjusted its value logic about firms, they still had the challenge to send a convincing signal for potential partners in the project. In other words, one thing is speaking the language of a foreign country, and another one is to make friends in that country. To send an unambiguous signal to firms about the project, the NGO formulated the project as a business initiative instead of a philanthropy project. Therefore, the process of aligning the project to firms' profit-oriented behavior entailed the framing of the project as a business initiative.

The project was framed as a business initiative with positive social impacts for poor suppliers, a win-win situation for both firms and poor suppliers. The search of partners started with the contacts made during the partnership with the business council. In this regard, the NGO's past experience with the business council served also as a signal for potential partners that the NGO's project was a "real" business initiative. Therefore, the embeddedness of the NGO in a network of inter-firm relationships was crucial to access potential partners and sent the right signal. This aspect is defined in previous research as structural social capital, it is defined as the overall pattern of connections between organizations, who you reach and how you reach them (Nahapiet and Ghoshal, 1998). This suggests that the structural social capital of the NGO enabled the alignment between poverty alleviation and firms' profit-oriented behavior.

Once the contact was made, the representatives of both organizations met to discuss the mechanism for implementing the project within the supply chain of the firm. They had to discuss the profile of suppliers to choose; the region where those suppliers would come from; the themes that needed to be addressed in the training program; etc. The communication between the members of both the NGO and the firms was intensive in this stage of the project. Given this situation, the abilities of the NGO's representatives were

critical in this part of the process, it was required that they could speak the “language” of managers, and at the same time had a deep knowledge of the dynamics of the supply market. For instance, NGO’s representatives had to understand the business process of the firm, the associated transaction costs of doing business with poor suppliers, and also be able to talk with managers and plan the implementation of the project. Thus, the competencies of NGO’s representatives were critical for the alignment of missions because they transmitted competence-based trust to managers; they allowed managers to believe that the project could simultaneously create profits and alleviate poverty.

We conceptualize this NGO representatives’ skills as boundary spanning capabilities, it refers to the individual abilities to deal with both business and NGO related issues. The indicator of relevance for the NGO was poverty reduction, but they had to transform this message into a business one. In this sense, one of the NGO’s representatives told us: “you don’t sell poverty reduction, you sell business models that have some benefit to the company, and I think that our staff was formed and trained in how you deal with companies and how you sit with them in an horizontal way and have a conversation with them about their business opportunities” (*NGO Regional director*). Additionally, we observed two categories of this boundary spanning capabilities: professional knowledge about the business process and supply markets, and strategic communication with firms’ managers (see Table 3.2). The representatives were professionals with experience in projects with poor farmers; most of them had worked for organizations that promoted exports from local suppliers, and organizations that promoted the development of local suppliers. Regarding their analytical skills, it was important that they were competent in value chain analysis, business plan design, and project management (see quote below). These individual capabilities were critical for achieving NGO’s mission alignment because they transmitted the profit-making aspect of the project to managers.

“...Competences in value chain analysis and business plan design; and communication skills with the producers and with the firm’s managers. This last skill is difficult to find. But in overall, I’d say that these skills were relevant among our staff.” *NGO Regional Sub-Director*

### **3.4.3. NGO’s and firm’s strategies alignment**

We observed that firms in the instances of the case study joined the project as a response to a sourcing need. For instance, five out of the six firms involved in the project (*large agribusiness, SME agribusiness, SME agro-manufacturer and large manufacturer*) used the project to develop or expand the base of local suppliers. The sourcing strategy of these firms consisted in increasing the volume of inputs purchased from local suppliers. In this sense, the project proposed by the NGO was a suitable opportunity to pursue their sourcing objectives. In the *large retailer*’s instance the firm used the project to improve the quality of sourced fresh products. Furthermore, the sourcing strategy of *SME manufacturer* was to outsource some of its manufacturing processes (e.g., manufacturing of furniture’s parts) to small workshops close to the plant. In all the observed instances, the project was conceived as a win-win opportunity, firms would satisfy their sourcing needs, and poor suppliers would increase their productivity, cut intermediaries and access better prices.

Poverty alleviation and sourcing strategy were aligned when the NGO was able to express its objectives in a profit-oriented language, firms aimed to develop local suppliers, and the items of poor producers were critical for firms’ long-term needs (see Table 3.3). This pattern, however, has to be interpreted within the appropriate context of our data. Our sample contains instances where one NGO adjusted its value logic and mission to firms’ profit-oriented behavior, and all the observed instances were about firms who decided to join the project. Unfortunately, we could not observe firms who declined to participate in the project. Consequently, our interpretations of inter-organizational fit are conditioned by the fact that we only observed instances where the project was aligned with firm’s strategy.



**Table 3.3: Concepts Present in Each Dyad**

<b>NGO-Firm Dyad</b>	<i>Large agribusiness</i>	<i>SME agribusiness</i>	<i>Large manufacturer</i>	<i>Large retailer</i>	<i>SME manufacturer</i>	<i>SME agri-manufacturer</i>
Value logic alignment	The NGO adjusted its vision of value creation by considering the private sector a valuable partner for such purposes.					
NGO's mission alignment	The NGO aligned its mission by finding a configuration where profits and social value are compatible.					
NGO structural social capital	It refers to the organizations that the NGO was capable to reach through its network of contacts.					
NGO's staff boundary spanning capabilities	It refers to the professional knowledge of NGO's representatives about business processes and supply markets; and to their communication skills of engaging in dialogues with both the private sector and poor suppliers.					
NGO's and firm's strategies alignment	High. The project was coherent with the strategy of consolidating a local base of corn farmers.	High. The project was coherent with the strategy of increasing milk local sourcing.	High. The project was coherent with the sourcing strategy of strengthening local suppliers.	High. The project was coherent with the strategy of improving the quality of local suppliers.	High. The project was coherent with the strategy of improving the quality of local workshops.	High. The project was coherent with the strategy of increasing the production of local farmers.
Inter-Organizational Fit	High. The project was tightly integrated with the supply management activities of the firm: suppliers' events, technical visits, etc.	High. The project was tightly integrated with the supply management of the firm: technical visits, collaborative initiatives with farmers' associations.	High. The project was tightly integrated within the supplier development program of the firm.	Low. The project's execution was assigned to one of its traders.	High. The project was tightly integrated within the quality program of one of the plants.	High. The project was tightly integrated within the technology-diffusion activities of the firm.
Purchasing function's specialization	High. There was a corn purchasing team. They purchased this item in local and international markets.	High. There was only one unit in charge of the purchasing and technical assistance to milk farmers.	High. There was a department in charge of the recycled materials, which mainly dealt with metal scrap.	Low. The assigned team was in charge of fresh products. Potato was a small fraction of this category.	High. The quality control team of the plant was in charge of the project.	High. The assigned team was in charge of the palm biotech development.

Table 3.3 continues

NGO-Firm Dyad	<i>Large agribusiness</i>	<i>SME agribusiness</i>	<i>Large manufacturer</i>	<i>Large retailer</i>	<i>SME manufacturer</i>	<i>SME agri-manufacturer</i>
Routines that support collaborative relationships	High. They have visits, suppliers' events and technical assistance.	High. Technical assistance, supplier's performance monitoring, etc.	High. Supplier's market intelligence, assistance and monitoring.	Low. The purchasing team did not deal directly with farmers.	Medium. Lease of equipment, visits to firm's plants.	High. Technical visit, suppliers' visits to firm's plantations.
Resource combination	High. The firm contributed product's knowledge, supply market's experience, and biotechnology	High. Supply's market knowledge, production know how	High. Supply market's knowledge	Low. The firm contributed only monetary resources	High. Production know-how	High. Production know-how and biotechnology.

Source: Elaborated by the author.

#### 3.4.4. Achieving Inter-Organizational Fit

Top managers were the first contact of the NGO. After top managers realized the strategic fit with the project, the project generally went to middle managers for its planning and implementation. Middle managers had to figure out how to insert the project within the structure and routines of their departments. In this sense, the inter-organizational fit occurred at the operational level where the activities of the project were aligned with the assigned department's processes. The departments in charge of the implementation varied in each instance, for example: in the *SME manufacturer* case, the project was assigned to the production department; in the *large agribusiness* and *SME agribusiness*, the project was assigned to the purchasing department. Regardless of the name of the department, the department who performed the purchasing function was generally assigned for the project. Hence, the structure and routines of the purchasing function were critical for the inter-organizational fit with the NGO.

Since the project was considered strategic for top managers in all the instances, the item to be sourced was critical either in terms of cost or risk for the firm. Hence, there was no variation in terms of this variable across the observed instances, but there was variation in the number of items managed by the purchasing managers and their teams. For instance, in the *SME agribusiness* the purchasing manager was only in charge of milk sourcing decisions; in the *large agribusiness* there were different purchasing managers for different products (e.g. rice, corn, etc.), however, the corn purchasing manager had the responsibility to integrate the NGO's project into the sourcing activities of corn. This situation was similar in every instance except the *large retailer* (see Table 3.3). The purchasing manager of the *large retailer* had a higher number of items to follow and make decisions about. When we compared this characteristic with the level of inter-organizational fit, we observed that firms that achieved high inter-organizational fit also had purchasing managers that managed a lower number of purchasing items.

We interpret this characteristic of the department as a structural property because it relates to the degree of job specialization of the purchasing function's team, a dimension of the concept of organizational structure, which is defined as the degree in which organizational tasks are subdivided (Daft, 2012; Mintzberg, 1993). This structural property allowed managers to better integrate the project because it produced less cognitive stress about the project's activities they had to manage. Since they were specialized on one item to be sourced from poor farmers, it was more manageable for these functional managers to engage in the project and facilitate the coordination with the NGO.

Nevertheless, during the interpretation of data, this characteristic was also associated with supply base complexity, which is conceptualized as the number of suppliers in the supply base, the degree of differentiation among these suppliers, and the level of inter-relationships among suppliers (Choi and Krause, 2006). This interpretation, however, was not convincing enough because there was not a pattern between complexity and inter-organizational fit. For instance, the *large agribusiness* and the *large retailer* managed thousands of transactions with hundreds farmers in its supply base, but the purchasing function in the *large agribusiness* had several teams, whereas the purchasing function in *large retailer* had only one team for all the fresh vegetables and fruits. Hence, *large agribusiness* and *large retailer* had high complexity in their supply base, but the *large agribusiness* had a more specialized purchasing function. Thus, job specialization instead of complexity matters for inter-organizational fit.

Furthermore, we observed that in the instances where high inter-organizational fit was achieved the incorporation of the project did not suppose any core change within the purchasing function. In other words, the processes of the purchasing function were malleable to incorporate the project without producing any abrupt change. For instance, the purchasing function of *SME agribusiness* had processes for assessing and monitoring its milk suppliers; the purchasing function of *large agribusiness* had processes that enable collaborative relationships with corn's farmers, and had a supplier development program for medium and large farmers. In this sense, these two

firms had processes for supporting collaborative, and close relationships with corn's farmers (see Table 3.3). This situation contrasted with the *large retailer*, who did not have processes to support collaborative relationship with farmers; farmers were second-tier suppliers and the purchasing function had no direct relationship with them. In this sense, the presence of departmental routines that supported collaborative relationships with poor farmers was another differencing characteristic.

We conceptualize these organizational routines that support collaborative relationship as an enabler of inter-organizational fit because they facilitate the integration of the project. We define the supporting collaborative relationship activities as a routine because they are collective and regular processes that are carried out by several individuals within the department, are context-specific to the sourced product, and path dependent for the department (Becker, 2005). We interpret that firms with these routines are more likely to integrate the project because they have the tacit knowledge of setting collaborative relationships and are better equipped to collaborate with other types of suppliers in the same product category. In this sense, the project's activities were path dependent to the purchasing function of these firms. Consequently, the incorporation of the project did not suppose core changes in the department's activities. Summarizing, we observed that inter-organizational fit occurred after strategic fit; and it was enabled by the existence of (1) job specialization within the structure of the purchasing function, and (2) organizational routines that supported collaborative relationships.

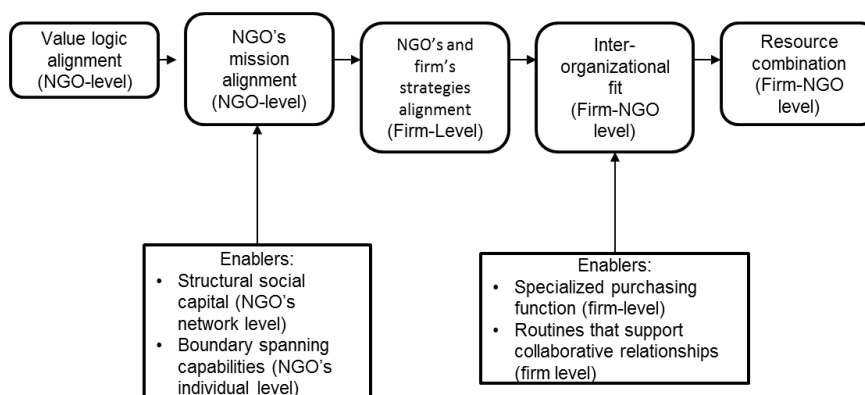
Regarding the relationship between inter-organizational fit and resource combination, we observed a pattern between these two constructs. Firms with high inter-organizational fit also had a high resource combination. We measured resource combination as high when firms brought to the project additional resources to monetary resources. For instance, *large agribusiness* also contributed with its knowledge in corn crops and its biotechnology (i.e. high performance seeds) for the supplier development program; *SME manufacturer* leased its physical assets (i.e. machinery) to suppliers in order to improve their production levels (see Table 3.3 for more details). Our

interpretation is that inter-organizational fit drove the combination of core resources (i.e. knowledge and technology) for the implementation of the supplier development program.

### 3.5. Discussion

The process of inter-organizational fit started with the NGO's value logic adjustment. NGO had to consider the private sector as a relevant source of value creation. This value logic adjustment drove the alignment of NGO's mission with the profit-oriented behavior of firms. This situation was enabled by the structural social capital of the NGO and the boundary spanning capabilities of NGO's representatives. Furthermore, the alignment of firm's strategy to the NGO's project objective was driven by the NGO's mission alignment. The harmonization between poverty alleviation and profit-oriented behavior drove the firm to fit its sourcing strategy with the objectives of the project. After that, inter-organizational fit was enabled by the job specialization of the purchasing function and the presence of supporting collaborative relationships routines (see Figure 3.1). Finally, it is important to remark that inter-organizational fit is constrained by the presence of strategic fit. In this sense, inter-organizational fit is a dependent event of strategic fit.

**Figure 3.1: Theoretical Framework of Firm-NGO Inter-organizational fit**



Source: Elaborated by the author.

The current paradigm in inter-organizational relationships between firms and their secondary stakeholders is one where firms implement socially sustainable practices to comply with stakeholder requirements (Parmigiani et al., 2011; Shafiq et al., 2014). In this sense, the field of socially sustainable supply chain management has not caught up with the advance of stakeholder theory and latest industry best practices that suggests firms can undertake a collaborative approach with secondary stakeholders to create value (Alvarez et al., 2010; Freeman et al., 2010). Our research goes in this line and proposes a theoretical framework of how organizational differences between firms and NGOs could be overtaken in order to implement joint initiatives that create value in socially sustainable supply chains. Building on previous results that suggest that firm-NGO resource combination creates value (Arenas et al., 2013; Selsky and Parker, 2005), and similar to prior research in cross-sector partnership literature (Austin and Seitanidi, 2012), our theoretical framework proposes that prior to resource combination, firms and NGOs have to match their organizational values, structures, and routines. Therefore, we propose the following:

*P1: Inter-organizational fit between the firm and the NGO is an antecedent for the combination of resources for implementing activities that create value in socially sustainable supply chains.*

Although the phenomenon of study is novel in the socially sustainable supply chain literature, it has been vastly studied in the cross-sector partnership literature. Previous studies in this latter stream suggest that firms and NGOs overcome their differences by realigning their organizational roles in the alliance (Le Ber and Branzei, 2010); Le Ber and Branzei (2010) suggest that both organizations fuse their interpretations of the world while they preserve their distinctive resources. From another perspective, Arenas et al. (2013) suggest that cooperative behavior between firms and NGOs is an evolution from conflictive relationships, which is facilitated by third parties who have network resources to join both the firm and the NGO. Our research improves the understanding of barriers' removal by indicating that this is a process where several organizational characteristics are incrementally aligned; a process that starts at the NGO organizational-level, moves to the

firm organizational level, and ends at the inter-organizational level. Along this process, we acknowledge that there are network level (NGO's structural social capital) and individual level factors (boundary spanning capabilities) that facilitate the process. In this sense, our research offers a more nuanced and precise view of how firms and NGO cooperate than what is offered in prior literature (Arenas et al., 2013; Le Ber and Branzei, 2010). Therefore, our theoretical framework proposes the following:

*P2: NGO's value logic alignment drives its mission's alignment with the profit-oriented behavior of firms.*

*P3A: NGO's structural social capital enables its mission alignment with the profit-oriented behavior of firms.*

*P3B: NGO representatives' boundary spanning capabilities enable its mission alignment with the profit-oriented behavior of firms.*

*P4: NGO's mission alignment with the profit-oriented behavior of firms drives the alignment between NGO's and firm's strategy.*

Our results suggest that there are organizational characteristics that make certain type of firms more likely to achieve inter-organizational fit given the presence of strategic fit. This situation improves our understanding of how cooperation is enabled in partnerships for socially sustainable supply chain practices. This explanation offers an alternative theoretical framework from the one proposed by Le Ber and Branzei (2010), which was based on organizational behavior set of variables. We think that the theoretical framework developed is more appropriate for studying this phenomenon from the perspective of supply chain management because the factors identified are closer to the constructs of the OM field and hence more likely to be tested by other scholars in this field. Consequently, our theoretical framework enhances the knowledge creation about firm-NGO cooperation in socially sustainable supply chains. Furthermore, our conceptualization of inter-organizational fit suggests that firms reconfigure their organizational processes and structures prior to the combination of resources for creating value in socially sustainable supply chains. This observation is relevant because it offers insights to



managers of how they could adjust their processes in order to engage in cooperative endeavors with NGOs. Therefore, our work also contributes to the socially sustainable supply chain literature by indicating the organizational properties that firms adjust in order to engage in cooperative actions with NGOs. In this sense, we propose the following:

*P5A: Highly specialized purchasing functions enable inter-organizational fit in cooperative initiatives with NGOs for the creation of value in socially sustainable supply chains.*

*P5B: Routines that support collaborative relationships enable inter-organizational fit in cooperative initiatives with NGOs for the creation of value in socially sustainable supply chains.*

### **3.6. Conclusion**

Our research has built on prior results which suggested that secondary stakeholders provide complementary resources for the creation of value (Arenas et al., 2013; Selsky and Parker, 2005). We have elaborated a process framework of the drivers and enablers that facilitate this type of cooperative initiatives between firms and secondary stakeholders. This framework emphasizes that firms and NGO overcome their organizational differences through a process that entails several alignments along the way: a value logic alignment, which includes the private sector as relevant source of value for the NGO; the alignment of NGO's mission with profit-oriented behavior of firms; the alignment of firm's strategy with NGO's operational objectives; and the adjustment of firm's organizational structures to NGO's activities. The factors that enable this process operate at several levels of analysis: network level, organizational level, dyadic level, and individual level. It means that this is a complex process, where managers and NGO's leaders have to orchestrate resources in diverse parts of their organizations.

Furthermore, it is important to mention that secondary stakeholders still exert pressure on firms for the implementation of socially sustainable practices. In this sense, there is a kind of duality on the relationships between firms and their secondary stakeholders. On one hand, firms have to comply

with the requirements that secondary stakeholders expect from them. On the other hand, cooperation with secondary stakeholders is a mechanism for complying with the requirement of the same secondary stakeholders (e.g. cooperating with a NGO that is exerting the pressure) or other secondary stakeholders (e.g. cooperating with a NGO to comply with governmental requirements). In this line, our results inform managers on how to configure their organizational structure and routines to engage in such cooperative initiatives. It also has implications for NGO's leaders on the aspects of their organizations and on the resources they need to develop in order to cooperate with the private sector.

Finally, our research is not free of limitations. Since we performed case study research, our research emphasizes internal validity over external validity. In this sense, we prevent the reader to generalize the results to conceptually different contexts than the studied in this paper. Furthermore, our interpretations are based on the interaction between one NGO and six firms, future research should observe how the unfolded process changes when organizational characteristics (i.e. organizational culture, value logic, etc.) of the NGO are altered. In this same line, the companies involved are local, it would be relevant that future research assess the impact of multinational companies and the relationship of headquarters-subsidiaries affect the presented theoretical framework. Finally, the reader should remember that we observed inter-organizational fit conditioned by firm's strategy alignment; it would be interesting that future research analyze the process of inter-organizational fit—if there is any—when firms join the NGO project due to institutional reasons

## **Chapter 4. NGOs' Initiatives to Enhance Social Sustainability in the Supply Chain: Poverty Alleviation through Supplier Development Programs<sup>2</sup>**

### **Abstract**

Previous research suggests that creative collaborations with non-traditional chain members such as non-governmental organizations (NGOs) could pave the way for making supply chains sustainable. In extant research, NGOs help focal firms achieve their goals in a more sustainable manner. However, NGOs regulators and other non-profits have objectives and supply chains of their own, something previous research has generally overlooked. This research addresses this point by studying how NGOs undertake socially sustainable supply chain practices in contexts in which synergies between social and economic performance were not initially foreseen. The research inductively builds a theoretical framework that explains how NGOs use supplier development (SD) programs to alleviate poverty. The framework posits that the NGO-resources of knowledge for localizing SD programs and a bridging capability are critical for designing and setting up the SD program. The NGO-resources are complimented by the buying firm-resources of knowledge transfer routines, logistical resources, and relational contracting based on procedural fairness that are critical to carry out the transactions and protect the value in the buyer-supplier relationship. NGO-resources and buying firm-resources are inter-temporal complements that enhance a supply chain's social sustainability.

**Keywords:** Sustainability; partnering; supplier management; case studies

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<sup>2</sup> Rodriguez, J.A. Gimenez, C., Arenas, D., Pagell, M. (2016) "NGOS' Initiatives to Enhance Social Sustainability in the Supply Chain: Poverty Alleviation through Supplier Development Programs," *Journal of Supply Chain Management*, Vol. 52.

## 4.1. Introduction

Discussions of sustainable supply chain management acknowledge that non-governmental organizations (NGOs) might participate in a supply chain. But NGOs are typically identified as “non-traditional” members of the supply chain (e.g. Pagell and Wu, 2009) and viewed as agents to help for-profit supply chains become more sustainable. Yet, NGOs have goals and supply chains of their own; something the previous literature has generally not considered. Therefore, this research explores how NGOs use traditional supply chain management tools while collaborating with other chain members, including impoverished suppliers and for-profit buyers, to improve the social and economic sustainability of all chain members.

Social problems, such as poverty alleviation, sweatshops and child labor, negatively affect both the welfare of society and the productivity of firms in the supply chain. These problems are complex because their solution requires the involvement of governments, the private sector, and civil society organizations (Selsky and Parker, 2005). The private sector has struggled at leading these efforts (e.g. Lund-Thomsen and Lindgreen, 2014).

For instance, in the apparel industry firms that source products from developing countries are required to adopt labor standards that promote social justice and human rights, and they have responded by joining industry consortia and implementing supplier audits and certifications (Mamic, 2005). However, these programs have been criticized for making supply chains less socially unsustainable, rather than more socially sustainable (Pagell and Shevchenko, 2014) and they did not prevent events such as the Rana Plaza tragedy (Lund-Thomsen and Lindgreen, 2014).

NGOs, working in the same space, can initiate projects that improve the social sustainability of supply chains and the communities where they operate (McDonald and Young, 2012). For instance, the Rainforest Alliance has conducted projects to train and certify poor producers to be incorporated into firms' supply chains that have resulted in reductions in child labor and improvements in poor producers' profits and women's access to labor

opportunities (Rainforest Alliance, 2014). Similarly, Solidaridad, has undertaken projects that have certified and incorporated poor farmers into agricultural supply chains for commodities such as livestock, cotton, soy, tea and coffee (Solidaridad, 2014). NGOs and other not-for-profits are likely to take a leading role in the creation of socially sustainable supply chains.

We know that NGOs are often better placed than for profits to address many issues of social sustainability and we know that they manage their supply chains to do so. What motivates this study is how little we know about these phenomena. To begin to fill this void and contribute to the socially sustainable supply chain literature this paper explores how NGOs use their supply chains to alleviate poverty. The research answers the following research questions: 1) what resources do NGOs use when they undertake supply-management practices for poverty alleviation? And 2) what firm resources do NGOs seek when they undertake supply-management practices for poverty alleviation?

We used a nested case study analysis to inductively build a theoretical framework to answer these questions. We purposefully chose to study a supplier development (SD) project conducted by a single NGO working to alleviate poverty in Ecuador. We studied six SD programs conducted by the NGO that involved six buying firms and multiple suppliers. Focusing on a single NGO working in a single country allowed us to isolate NGO-level variables and focus on the deployment of resources in multiple supply chains.

This research provides a framework that explains how non-economic actors use traditional supply management practices to create innovative, socially sustainable supply chains in contexts with no foreseen synergies between social and economic performance. The framework posits that the NGO-resources of knowledge for localizing SD programs and a bridging capability are critical for designing and setting up the SD program. The NGO-resources are complimented by the buying firm-resources of knowledge transfer routines, logistical resources, and relational contracting based on procedural fairness that are critical to carry out the transactions and protect the value in the buyer-supplier relationship. NGO-resources and

buying firm-resources are inter-temporal complements that enhance a supply chain's social sustainability.

This research's primary contribution comes from identifying and conceptualizing the resources that NGOs should develop themselves and acquire from buying firms in order to set up SD programs to alleviate poverty. The research also explains the dynamics across time between the identified resources and the SD programs.

The research also makes a contribution to the wider literature. By treating the NGO as the focal actor in the network, rather than as a "non-traditional" chain member, the research shows that traditional supply chain management practices are successfully used by not-for profit organizations to improve the social sustainability of both the community and firms operating in the community. In so doing, this research helps to open a pathway to further understand organizations and supply chains that have goals other than profit maximization. Previous research suggests that the achievement of truly socially sustainable supply chains entails the development of new practices and/or collaboration with stakeholders in creative ways (Klassen and Vereecke, 2012; Margolis and Walsh, 2003). This research suggests that fully understanding these practices and collaborations will require examining the supply chains of both for profit and not-for-profit supply chains.

The paper is structured as follows. First, we review the literature that shapes and explains the phenomenon of interest. Second, we describe and justify our research method. Third, the analysis and results are presented. Fourth, we return to the literature and discuss the relevance of our findings. Finally, we present our conclusions.

## **4.2. Literature Review**

The literature review is structured in two parts. First, we describe how the topic of poverty alleviation fits into the literature on social sustainability. Second, we explore how business initiatives can be applied for poverty alleviation and how NGOs can engage in supply-management practices to alleviate poverty.

#### **4.2.1. Social Sustainability and Poverty Alleviation**

A socially sustainable firm makes profits without harming society (Carter and Rogers, 2008). The literature classifies social practices as either internal or external. Internal practices include providing safe and healthy working conditions and freedom of association for the firm's workers (Gimenez et al., 2012; Pullman et al., 2009). External practices aim to control supplier behaviors and to foster social equity along the supply chain. External practices include auditing or certifying suppliers to avoid sweatshops and child labor, participation in consumer associations to promote customers' wellbeing, and engagement with stakeholders to foster the development of local communities (Gimenez et al., 2012; Pullman et al., 2009).

The literature has primarily focused on internal social practices (Miemczyk et al., 2012). This is likely due to the challenges of implementing external social practices. First, most external social impacts extend beyond the responsibility of a single organization or supply chain. For instance, child labor and poverty alleviation are global issues that extend beyond the boundary of a single corporation, supply chain or NGO; these issues pertain to the entire society. Second, the pursuit of social sustainability can be detrimental to a firm's economic performance because it diverts resources that could be used to increase profits (Margolis and Walsh, 2003). Consequently, firms tend to implement socially sustainable practices that mitigate the negative effect of their operations instead of initiatives that build truly socially sustainable supply chains (Pagell and Shevchenko, 2014).

Poverty alleviation is a social issue that firms tend not to address. However poverty alleviation is a critical issue for firms that source products from developing economies where poverty rates in rural areas can reach 70% of the population (WorldBank 2011). Although there are cases in which individual firms have led the implementation of initiatives for poverty alleviation (e.g. Nestle and Unilever), this type of initiative typically requires resources that an average firm would not possess (Kolk and Van Tulder, 2006). NGOs as non-economic actors are better equipped and their missions are better aligned with social matters such as poverty alleviation. Therefore,

NGOs are in a better position to undertake poverty alleviation efforts where the synergies with the supply chain's economic performance are not evident (Margolis and Walsh, 2003).

Operationalizations of being poor, impoverished or at the Bottom-of-the-pyramid (BOP) are often imprecise, which has led to scholars studying different populations under the same rubric (Kolk et al., 2014). In this research, BOP, poor or impoverished suppliers are suppliers from rural and urban populations who live on between 2 and 5 PPP-adjusted USD a day. An income of more than 2 USD per day exceeds the threshold for extreme poverty (WorldBank, 2010) but it is still insufficient to afford all basic food needs, making this population poor.

#### **4.2.2. Poverty Alleviation through Supply Management Practices**

People at the BOP usually pay higher prices for the goods and services they consume because they are isolated from main markets, suffer local monopolies, and lack the infrastructure to adequately store products (Pralhad, 2004). Prahalad argues that firms should create innovative operations and business models to allow these consumers to access better goods and services at a lower price. Firms would increase their profits and the poor would increase their welfare, a win-win scenario. However, the poor do not improve their capability to generate rents by buying cheaper products (Karnani, 2007) so it is suggested that a better mechanism for poverty alleviation is incorporating the poor as suppliers (Karnani, 2007; London et al., 2010). Still research has focused more on business initiatives where the poor are consumers (Kolk et al., 2014). Hence, Kolk et al. (2014) suggest that more research is needed about initiatives that incorporate the poor as suppliers, and where other stakeholders such as governments, NGOs and local SMEs also participate in the initiative.

Firms can support poverty alleviation by incorporating poor producers into their supply chains (Karnani, 2007; Sodhi and Tang, 2014). However, firms find it very challenging to start such initiatives due to a lack of knowledge about the context of poor suppliers, the high transaction costs of



doing business with poor suppliers and the potential conflict between alleviating poverty and the firm's economic performance (London et al., 2010; Margolis and Walsh, 2003). Therefore, these projects are better suited to NGOs' missions and knowledge. However, NGOs generally lack the capacity to place the products of poor suppliers into the market. In this context, NGOs and firms can complement each other to undertake supply management practices that incorporate poor suppliers into supply chains.

The collaboration between NGOs and firms has been widely studied in the literature of cross-sector partnerships. One of the dominant logics in this literature is that NGOs and firms have complementary resources that enable the creation of social value (Selsky and Parker, 2005). This logic generally relies on both the relational view and social capital theory (Hahn and Gold, 2014; Seitanidi et al., 2010). The relational view was originally used to explain how multiple firms working together could achieve inter-organizational competitive advantage (Dyer and Singh, 1998). More recently, the relational view has been applied to explain how NGOs and firms combine their resources to create new valuable resources for creating social value (Hahn and Gold, 2014; Selsky and Parker, 2005). Social capital is the brokerage opportunities that an actor has in its social network (Burt, 2005). At the organizational level, social capital theory has been used to explain organizational performance and acquisition of resources through social networks (Payne et al., 2011). Similarly, in firm-NGO relationships, social capital theory suggests that NGOs will use their network position to scan and assess the resources that potential partners could bring to a partnership (Seitanidi et al., 2010). Previous literature acknowledges that firms and NGOs could complement each other when implementing socially sustainable supply management practices, but how NGOs develop and implement such initiatives by cooperating with firms has been understudied. This paper aims to fill this gap.

### **4.3. Methods**

Existing theory in supply chain management does not provide clear guidelines about how supply management practices can be implemented in

the context of poverty alleviation. The participation of NGOs in sustainable supply chain initiatives for poverty alleviation is a little-observed phenomenon that we would expect to see more often in the future. Because case studies allow for the identification of key variables and their relationship, they are suitable for studying an emergent phenomena in depth and are used in this research (Gibbert et al., 2008). The case study methodology allowed us to build a thorough description of the underlying reality of NGO poverty alleviation initiatives in supply chains.

#### **4.3.1. Case Selection and Research Setting**

The selected case study was an international project led by a multinational NGO with operations in Latin America, Africa, and Asia whose focus was on poverty alleviation through the economic development and inclusion of the poor. The NGO received funding from different institutions such as governmental agencies, development organizations, and multilateral banks. The NGO had more than 15 years of experience in projects aimed at the economic development and inclusion of the poor, but it had very little experience of working with the private sector.

The NGO's first private sector alliance was conducted with an international business council who the NGO approached with the aim of implementing business initiatives to help the poor. As a result of this alliance, the NGO implemented several pilot projects with the private sector. One year later a multilateral bank funded the NGO to implement a project to use SD programs to transfer best production practices to poor suppliers. That is the project studied in this paper. This particular project was selected because it involved a single NGO and multiple buying firms; a suitable context to isolate NGO-level variables and to focus exclusively on how the NGO deployed their resources in multiple supply chains. Moreover, while the project operated in multiple countries, we also isolated institutional variables by only studying the SD programs implemented in Ecuador

The project involved nine business initiatives in Ecuador. However, only seven of those initiatives were SD programs. The remaining two

initiatives were aimed at developing distribution channels to deliver products for the poor. The seven SD programs entailed both successful and unsuccessful programs, buying firms from a variety of industries, and suppliers with diverse socio-economic characteristics and productivity challenges. Our final sample included six out of the seven SD programs. Thus, we used a nested case study design, where the unit of analysis was the SD program.

To implement the SD programs, the NGO used its contacts from the alliance with the international business council to attract firms. Firms were invited to participate in workshops to analyze their supply chains and determine how to incorporate poor producers as suppliers. The ideal firm to participate in the SD program was a firm (1) with a supply networks with a high concentration of poor suppliers; (2) willing to invest money in SD programs with poor suppliers; and (3) willing to establish partnerships with poor suppliers. Once the NGO and a particular buying firm had agreed to work together, they defined the profile of the suppliers and the geographical regions. Next, the NGO visited the potential suppliers to understand their socio-economic situation and any potential barriers to doing business with the buying firm, as well as to create ties with the leaders of each village. Then, the NGO worked with each buying firm in the design of the SD program to address the realities of suppliers from each geographical region. In some instances, such as corn and potato farming, the NGO and the buying firm first ran pilot SD programs. Finally, the NGO and the buying firms launched a training program for each supply chain focused on improving operational efficiency and creating mechanisms to facilitate transactions between the suppliers and the buying firms.

Previous BOP literature uses the term poor consumers and poor suppliers to describe the beneficiaries of BOP initiatives (Kolk et al., 2014; London et al., 2010). In our study we consider two types of poor suppliers living on less than 5 PPP-adjusted USD a day: farmers with fewer than 5 Hectares, and small family-owned businesses that employed poor people (see Table 4.1).

**Table 4.1: Sample Description**

<b>Unit of analysis</b>	<b>Description of the SD program</b>	<b>Poor suppliers</b>	<b>Buying firm (BF)</b>
Dairy farming	The SD program involved a farmer-training program on milk storage and grass farming; and investments by the BF to create consolidation centers. The program included 1,085 dairy farmers from 18 cooperatives within 50 km of BF's production facilities. The total investment in the SD was 128,000 USD.	Dairy farmers had other sources of income besides milk (jobs in plantations and agricultural products); milk yields were low; farmers had an average of 7 cows in production; they had access to school, hospitals, etc.; and they also had a medium degree of bancarization.	The BF was a cheese manufacturer that sourced its milk from medium dairy farmers (less than 20 hectares) and cooperatives of small farmers. It had 17 million USD in sales.
Metal scrap collectors	The SD program involved a training program for the collection center managers and investment by the BF in the centers' facilities. The program included 27 scrap collection centers. The total investment in the SD was 110,000 USD.	Families living in urban areas engaged in the collection center business. Scrap was their main source of income. The family had some access to financial markets, health insurance, and children's education. Families possessed a few assets: pick-ups and small houses.	The BF was a steel manufacturer of ribs, pipes, and decks. It sourced scrap from local collectors and to a lesser extent, imported it; the BF had 160 million USD in sales.
Corn farming	The SD program involved training in farming practices, technical assistance and the delivery of seeds and farming equipment by the BF. The program included 650 farmers with less than 5 hectares within 50 km of BF's facilities. The total investment in the SD was 400,000 USD.	Corn farming was the main source of income; fewer than 5 hectares of cultivable land per farmer; low yields per hectares (2 tons/Hectares); no irrigation systems; one cycle of production per year during the rainy season; issues around property rights, tax ID and low bancarization.	The BF was a food processor: the BF grew the animal and sold the processed chicken, pork, beef and seafood. It sourced corn mainly from local suppliers; it had 649 million USD in sales.
Carpentry workshops	The SD program involved a worker-training program and the lease of manufacturing equipment. It included 4 workshops of fewer than 15 workers. The total investment in the SD was 65,000 USD.	Workshops had low capital endowments, low product quality and a high proportion of waste. Workers lived in urban areas with access to hospitals, schools, etc.; they manufactured pieces, parts, and furniture for the BF. There was a low degree of informal operations.	The BF was a furniture manufacturer and a retailer. It sold furniture for living rooms, dining rooms and kitchen cabinets. It had 28 million USD in sales.

**Table 4.1 continues**

<b>Unit of analysis</b>	<b>Description of the SD program</b>	<b>Poor suppliers</b>	<b>Buying firm (BF)</b>
<b>Palm tree farming</b>	The NGO approached the BF almost at the end of the project. The SD program included the supply market research and supplier selection. The project timing constrained the implementation of the training program. The total investment in the SD was 18,000 USD.	80% of farmers had a land area of less than 5 hectares; and for 40% of them, the palm tree was the main source of income; there was irrigation and access to roads; farmers owned the land but had some issues with tax ID; high bancarization.	The BF was a palm oil processor. It exported the oil or distributed it locally. It had 77 million USD in sales.
<b>Potato farming</b>	The SD program entailed a training program in farming best practices and the delivery of certified seeds. It included 300 farmers in 6 cooperatives. The implementation of the SD program was delegated to a trader. The total investment in the SD was 92,000 USD.	Potato farming was the primary economic activity; the land area was smaller than 5 hectares; the yields were low; the cooperatives had an irrigation infrastructure and were close to main roads; no tax ID; there were issues with land property rights; low bancarization.	The BF was a national chain of supermarkets. It had 1,400 million USD in sales.

Source: Elaborated by the author.

### **4.3.2. Data Collection**

We created a case study protocol to guide the data collection process and enhance the internal and construct validity of the study (Yin, 2013). Our research is focused on identifying the resources needed from both the NGO and the buying firm for successfully implementing SD programs to alleviate poverty. Therefore, we designed the data collection in a way that allowed us to build a valid and reliable description of the process of SD implementation. The implementation started when the NGO decided to cooperate with the buying firm and finished when the suppliers delivered their products to the buying firm. The relational view and social capital theory were used to guide the data collection on organizational characteristics and inter-organizational relationships during the SD implementation.

Data collection began in December 2011, and the last interview was conducted in July 2013. One of the researchers travelled to Ecuador to meet with representatives from the NGO and the buying firms. Follow-up interviews were arranged through videoconferences to obtain additional data. We interviewed 18 people and there were usually two rounds of interviews with each informant. The average interview length was 90 minutes (see Table 4.2). Interviews were recorded and transcribed. In addition, we gathered reports and brochures as secondary data for our analysis. To evaluate the results of each SD program we relied on third-party assessments rather than interviewing the buyers or suppliers. These assessments usually described the socio-economic conditions, demographics, production practices, and benefits achieved by the farmers and other suppliers after the SD program.

<b>Table 4.2: Informants per Instance of Observation</b>			
No	Informant		Instance of observation
1	General Manager	Buying firm	Dairy farming
2	Manager SD Program	Buying firm	Dairy farming
3	NGO advisor 1	NGO	Dairy farming; Corn farming
4	Recycling Division Director	Buying firm	Metal scrap collector
5	NGO Advisor 2	NGO	Metal scrap collector; Carpentry workshops
6	CSR Director	Buying firm	Corn farming
7	Purchasing Manager	Buying firm	Corn farming
8	Business Unit Director	Buying firm	Corn farming
9	Supervisor SD Program	Buying firm	Corn farming
10	Plant Manager	Buying firm	Carpentry workshops
11	Quality Control Manager	Buying firm	Carpentry workshops
12	General Manager	Buying firm	Palm tree farming
13	NGO Advisor 3	NGO	Palm tree farming; Potato farming
14	General Manager Trader Company	Buying firm- related part	Potato farming
15	NGO Advisor 4	NGO	Potato farming
16	Regional Director	NGO	Cross-instances view
17	Regional Sub-director	NGO	Cross-instances view
18	Business Council Manager	Business Council (NGO-related part)	Cross-instances view

Source: Elaborated by the author.

The following was done to enhance the quality of the data collected. First, data was gathered from multiple sources. This led us to disregard the final (seventh) SD program, as we were not able to collect data from the buying firm. Both primary and secondary data gathered from the NGO strongly suggested that this instance did not add new theoretical insights about our units of analysis. Consequently, saturation was reached with the sixth (of a possible seven) instance of observation. Second, the protocol targeted specific aspects of the phenomenon and increased the reliability of recalling past events (Miller et al., 1997). Finally, we created a case study

database using NVIVO software, which facilitated the retrieval of data during all stages of the coding and analysis (see Table 4.3 for a detailed description).

<b>Table 4.3: Synthesis of Research Design Aspects</b>		
<b>Test</b>	<b>Case study tactic</b>	<b>Brief description</b>
Construct validity	<ul style="list-style-type: none"> <li>- Multiple sources of evidence</li> <li>- Chain of evidence</li> <li>- Preliminary results were discussed with key informants</li> </ul>	<ul style="list-style-type: none"> <li>- The operationalization and measures of our concepts (e.g. poverty alleviation, transaction costs, and relational capital) followed established measures in prior research.</li> <li>- The interpretations of concepts and patterns were based on triangulated data.</li> <li>- Cross-instance interviews were performed to enhance the data interpretation.</li> </ul>
Internal validity	<ul style="list-style-type: none"> <li>- Pattern matching</li> <li>- Addressed rival explanations</li> </ul>	<ul style="list-style-type: none"> <li>- Interpretation of concepts and patterns were contrasted across instances and against rival explanations.</li> </ul>
External validity	<ul style="list-style-type: none"> <li>- Use of theory</li> <li>- Replication logic</li> </ul>	<ul style="list-style-type: none"> <li>- Analytic generalization: the emerged concepts and patterns shed light on theoretical aspects of the non-economic stakeholders' impact on socially sustainable supply chains.</li> <li>- Our interpretations were based on instances of diverse theoretical properties: different firm sizes, industry, supply chains.</li> </ul>
Reliability	<ul style="list-style-type: none"> <li>- Case study protocol</li> <li>- Case study database</li> <li>- Data coded and interpreted by several researchers</li> </ul>	<ul style="list-style-type: none"> <li>- The procedure of data collection was guided by a protocol; and data was analyzed and stored in a NVIVO database.</li> <li>- One of the authors coded the data. Then, it was checked by a second one. Finally, sense making workshops among three researchers to clarify divergent interpretations and reach consensus.</li> <li>- Instances' timelines were presented to NGO's representatives.</li> </ul>

Source: This table was adapted from figure 2.3 of Yin (2013).



### **4.3.3. Data Coding**

Data coding identified the level of poverty alleviation and the resources used and sought by the NGO in each instance of observation. The data to be coded were mostly qualitative and came from primary and secondary sources. Primary data included the transcripts from the recorded interviews, presentations by representatives of both the NGO and buying firms, and the researcher's field notes. Secondary data came from reports, brochures, and quantitative third party assessments of each of the six individual SD programs. Two researchers initially coded the data independently. When there were disagreements between these two researchers they were solved through sense making workshops led by a third researcher. At these workshops, three members of the research team discussed each disagreement until a consensus was reached.

#### **4.3.3.1. Coding of Poverty Alleviation**

People with better capabilities and lower transaction costs have more economic and social opportunities (Ansari et al., 2012; London et al., 2010). Hence, we conceptualize poverty alleviation through two dimensions: the development of suppliers' capabilities and the reduction of transaction costs in the buyer-supplier relationship.

The development of capabilities was operationalized through operational efficiency because it is a measure of the suppliers' capabilities to better run their businesses. For the agribusiness instances, we used income and yield because they are indicators of how well farmers manage their crops. Workers were the targets in the carpentry workshop, so we used income and the level of waste reduction (less waste would mean that workers are more efficient in the use of materials) as a proxy of operational efficiency. For metal scrap collectors we used the reported family income because indicators of their costs and level of productivity were not available (see Table 4.4).

Transaction costs are defined as the sum of coordination costs and transaction risks (Williamson, 1981). Coordination costs refer to the costs of exchanging information and utilizing it in the decision process, whereas

transaction risk refer to the probability that the other parties in the transaction will avoid their agreed-upon responsibilities (Williamson, 1981). Coordination cost reduction was measured qualitatively by assessing the barriers or inhibitors to conducting a transaction. For instance, indicators of decreased barriers were if the supplier had opened a bank account, obtained a tax ID, or developed mechanisms to deliver the output. To measure transaction risk reduction, we assessed the suppliers' commitment to the buyer-supplier relationship based on whether the suppliers remained in the relationship after the NGO project was over and the suppliers' expectations about the relationship in the future (see Table 4.4).

In summary, we coded poverty alleviation as high when the suppliers improved their operational efficiency and reduced their coordination costs and transaction risks. We conceptualized poverty alleviation as medium when operational efficiency was improved but either coordination costs or transaction risks were not reduced. Finally, poverty alleviation was low when operational efficiency did not improve and neither coordination costs nor transaction risks decreased.

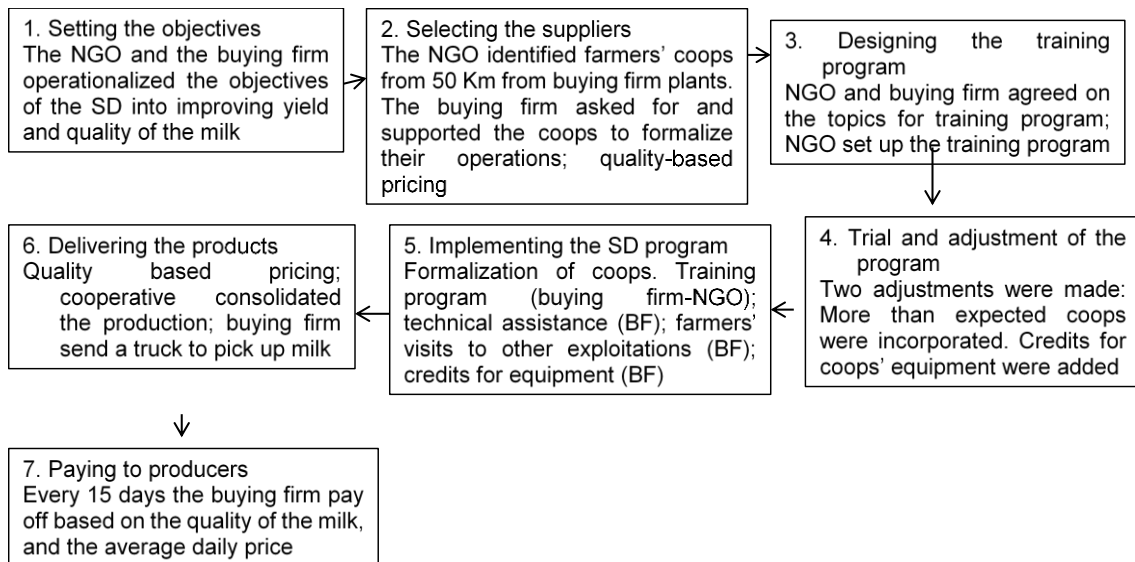
<b>Table 4.4: Outcomes of the SD Programs</b>	
<b>Unit of analysis</b>	<b>Poverty alleviation Outcomes</b>
Dairy farming	<p><b>Overall outcome:</b> High poverty alleviation</p> <p><b>Operational efficiency:</b> In average, farmers increased their productivity from 4.7 L/cow/day to 5.9 L/cow/day; and their annual income from 1,951 to 3,058 USD adjusted per inflation.</p> <p><b>Coordination costs:</b> The cooperatives constituted consolidation centers; cooperatives were legally constituted (i.e., they had tax IDs and a formal structure).</p> <p><b>Transaction risk:</b> The relationship with the buying firm was strengthened; it started with 4 cooperatives and grew to 18; the buying firm increased the volume purchased from cooperatives (reaching a 45% of the total supply of milk).</p>
Metal scrap collectors	<p><b>Overall outcome:</b> High poverty alleviation.</p> <p><b>Operational efficiency:</b> On average, the annual income of the enterprise increased from 5,563 to 17,168 USD adjusted per inflation.</p> <p><b>Coordination costs:</b> The centers obtained environmental certifications. In addition to that permit, the businesses were within the formal economy.</p> <p><b>Transaction risks:</b> Buying firm increased the number of collection centers (17 to 27). The SD program was established within buying firm's purchasing practices and became something regular.</p>
Corn farming	<p><b>Overall outcome:</b> High poverty alleviation.</p> <p><b>Operational efficiency:</b> On average, farmers increased their yield from 2 tons/hectares to 7 tons/hectares; and their annual income from 678 to 2,163 USD adjusted for inflation.</p> <p><b>Coordination costs:</b> They were lowered; all farmers had a savings account, legalized their land property rights, and obtained a tax ID.</p> <p><b>Transaction risks:</b> The farmers kept the relationship with buying firm; the program was replicated to other regions and more farmers were added.</p>
Carpentry workshops	<p><b>Overall outcome:</b> Medium poverty alleviation.</p> <p><b>Operational efficiency:</b> Reduction in 55% of waste of materials; the annual average salary of workers increased from 2,450 to 2,789 USD adjusted for inflation.</p> <p><b>Coordination costs:</b> The degree of informal operations was already low.</p> <p><b>Transaction risks:</b> Risks were not avoided; 3 workshops ended the relationship with buying firm.</p>
Palm tree farming	<p><b>Overall outcome:</b> No results. The buying firm entered the project few months before its closing date. The process reached stage t, where both buying firm and NGO designed the SD program. The SD program was not implemented during the NGO project, but it set the ground for a firm-led SD program. However, there were no results about that initiative at the time of data collection.</p>
Potato farming	<p><b>Overall outcome:</b> No poverty alleviation.</p> <p><b>Operational efficiency:</b> Farmers did not improve their yields after the SD program.</p> <p><b>Coordination costs:</b> Coordination costs remained high after the SD program: there was an absence of consolidation centers and formalization of operations.</p> <p><b>Transaction risk:</b> Risks were not avoided. Few farmers delivered their production to the firms providing the SD. The buying firm-supplier relationship could not be sustained and it ended after the SD program.</p>

Source: Elaborated by the author.

### 4.3.3.2. Coding of Resources

We defined resources as all assets, capabilities, processes, information and knowledge controlled by an organization (Barney, 1991). Resources are embedded in processes and routines (Eisenhardt and Martin, 2000). To disentangle resources from the processes and routines of the NGO's project, we wrote thick descriptions for each instance of SD based on the coded data. Then, the descriptions were summarized into chronological timelines of events and actions for each SD program (see Figure 4.1). The resulting sequence was presented to the NGO's representatives in order to check its validity.

**Figure 4.1: Illustration of Case Timeline (Dairy Farming Instance)**



Source: Elaborated by the author.

The final timeline was categorized into 3 stages: the NGO initiating the project, the SD implementation, and the buying firm-suppliers' initial transaction (see Table 4.5). Then, the whole database of interviews, reports, presentations, field notes and so on was classified into these three stages. For instance, the transcribed interview of the CSR Director of the Corn Farming

case was analyzed and every answer related to how they met the NGO, how the conversations were conducted, and what made them enter the project was categorized into the project's initiation stage. Similarly, every answer on who within the buying firm was delegated to run the project, the challenges during the implementation, the criteria for the selection of farmers and the planning and execution of the SD program were categorized into the SD implementation stage. We followed this procedure for every document in the database in every instance of SD. After that, we elaborated a list of resources/codes from the literature on SD programs and supply management to facilitate the identification of assets, capabilities, information, and knowledge that the NGO and the buying firm contributed during the project (Miles and Huberman, 1994). Through this mechanism, we observed the resources from both the NGO and the buying firm that emerged in each stage of the project and in each instance of observation (see Table 4.6).

**Table 4.5: Description of the Stages where Observed Resources Emerged**

Stage	Description
Stage t: NGO initiates the project	It started when the NGO approached the buying firms; entailing the negotiation between them, the commitment of the buying firms, the approach of the NGO to the suppliers; and it finished when both the NGO and the firms designed the SD program.
Stage t+1: SD implementation	It started when the training program was implemented; it entailed the interaction between the NGO, the buying firms, and the suppliers during the training program; and it finished when the training programs were over.
Stage t+2: Buying firms-suppliers initial transaction	It started when the suppliers delivered the first production lot/order to the buying firm. In the instances of dairy farming, carpentry workshops, and metal scrap collectors this stage overlapped with stage t+1. This stage either ended when the suppliers quit the relationship or has continued to the present.

Source: Elaborated by the author.

**Table 4.6: Resources/Codes Identified across Instances and along the Project**

	<b>Stage t: NGO initiates the project</b>	<b>Stage t+1: SD implementation</b>	<b>Stage t+2: Buying firm-suppliers initial transaction</b>
<b>Dairy farming</b>	<p><b>NGO:</b> Ability-based trust, boundary spanning, social capital, access to funding, support BF adaptation, business perspective, supply intelligence</p> <p><b>BF:</b> Dependence on item, competitive priority, corporate values</p>	<p><b>NGO:</b> Collaboration commitment</p> <p><b>BF:</b> Buyer-supplier socialization, production know-how, experience in SD, internal integration, inter-organizational trust, strategic purchasing, technical assistance, transfer know-how, top management support, experience on collaborative relationship</p>	<p><b>BF:</b> Long term orientation, positive attitude to supplier, commitment with suppliers, transparency, logistics, quality-based purchasing, fairness, supplier's proximity, quick payment system</p>
<b>Metal scrap collectors</b>	<p><b>NGO:</b> Boundary spanning, social capital, business perspective</p> <p><b>BF:</b> Dependence on item, slack, competitive priority, power</p>	<p><b>NGO:</b> Collaboration commitment</p> <p><b>BF:</b> Buyer-supplier socialization, experience in SD, internal integration, strategic purchasing, investment in suppliers' assets, top management support, experience on collaborative relationship</p>	<p><b>BF:</b> Long term orientation, positive attitude to supplier, commitment with suppliers, transparency, logistics, fairness</p>
<b>Corn farming</b>	<p><b>NGO:</b> Boundary spanning, social capital, support BF adaptation, business perspective, supply intelligence</p> <p><b>BF:</b> Dependence on item, slack, competitive priority, CSR, corporate values, power</p>	<p><b>NGO:</b> Collaboration commitment</p> <p><b>BF:</b> Buyer-supplier socialization, production know-how, experience in SD, internal integration, inter-organizational trust, strategic purchasing, technical assistance, transfer know-how, top management support, experience on collaborative relationship</p>	<p><b>BF:</b> Long term orientation, positive attitude to supplier, commitment with suppliers, transparency, logistics, fairness, supplier's proximity</p>
<b>Carpentry workshops</b>	<p><b>NGO:</b> Boundary spanning, social capital, access to funding, support BF adaptation, business perspective</p> <p><b>BF:</b> Outsource, power</p>	<p><b>NGO:</b> Collaboration commitment</p> <p><b>BF:</b> production know-how, assets-lease, internal integration, inter-organizational trust, investment in suppliers' assets, top management support</p>	<p><b>BF:</b> Commitment with suppliers, quality-based purchasing, supplier's proximity, transparency</p>
<b>Palm tree farming</b>	<p><b>NGO:</b> Boundary spanning, social capital, access to funding, business perspective, supply intelligence</p> <p><b>BF:</b> Dependence on item, power</p>	<p><b>NGO:</b> Collaboration commitment</p> <p><b>BF:</b> Top management support</p>	<p><b>BF</b> did not reach this stage</p>

**Table 4.6 continues**

	<b>Stage t: NGO initiates the project</b>	<b>Stage t+1: SD implementation</b>	<b>Stage t+2: Buying firm-suppliers initial transaction</b>
<b>Potato farming</b>	<b>NGO:</b> Boundary spanning, social capital, support BF adaptation, business perspective, supply intelligence <b>BF:</b> Slack, CSR, power	<b>NGO:</b> Collaboration commitment <b>BF:</b> Internal integration, inter-organizational trust, delivery of seeds, strategic purchasing, top management support	<b>BF:</b> Logistics deficiencies, quality-based purchasing

Source: Elaborated by the author.



#### **4.4. Data Analysis**

The design is a nested series of instances of SD performed by a single NGO. Analysis started by addressing each instance, which is analogous to within case analysis. This was followed by determining the patterns across instances, which is equivalent to cross-case analysis. The purpose of the within-case analysis was twofold: to deeply understand the underlying research phenomenon, and to build an explanation of how poverty was alleviated, or not, in each instance of SD. The purpose of the cross-case analysis was to compare and contrast the explanations of each instance in order to establish a replicated pattern of how poverty was alleviated across the SD programs (Yin, 2013).

Much like the coding, data analysis was initially performed by two researchers with disagreements being worked out through workshops led by a third researcher. The end result for each instance was a summary of the data that led us conclude if poverty was alleviated or not, the timeline of activities and events for the specific SD project, a list of the resources supplied by the NGO and buying firm linked to the timeline's stages, and working propositions about the potential relationships between the resources and the poverty alleviation outcomes in that specific instance of SD (Yin, 2013).

Next, the cross-case analysis entailed comparisons of timelines, resources, and patterns of resource deployment across the six SD instances. The analysis started with classifying the resources deployed or sought by the NGO according to their utilization in each stage of the timeline. Then, we analyzed the common resources among the instances of poverty alleviation.

We followed a replication logic, where we kept the pattern that was consistently replicated across the instances of SD that were successful at poverty alleviation. Next, this replicated pattern was compared with the results of the instances of SD that did not lead to poverty alleviation, and we kept the resources that discriminated between the two outcomes. Finally, we compared the resulting framework with alternative explanations of poverty alleviation identified in the literature (this is further explained in the following

section). This analytic strategy allowed us to build a theoretical framework of the resources that enhance the implementation of SD programs for poverty alleviation.

## **4.5. Results**

This section is structured in three parts. First, the resources provided by the NGO are described, then the resources provided by the firm are described, and finally alternative explanations for the phenomenon studied are addressed.

### **4.5.1. Resources Provided by the NGO**

The resources described in this section emerged during the initiation stage (stage t) of the project timeline. The NGO provided these resources during the negotiation and they were instrumental in influencing managers to participate in the project. These resources are (1) knowledge for localizing the SD programs and (2) the NGO's bridging capability.

#### **4.5.1.1. Knowledge for Localizing SD Programs**

To reduce transaction costs and operational inefficiencies they first need to be identified. The NGO had more than 15 years of experience in implementing projects with poor farmers in a variety of supply chains, such as cocoa, dairy, and tropical fruits. The NGO knew the context where the suppliers were embedded and how they operated giving the NGO a deep understanding of the poor farmers' reality. The NGO's knowledge was instrumental in poverty alleviation because it enabled both (1) targeting the specific problems that were affecting poor suppliers' operational efficiency; and (2) identifying the suppliers' transaction risks. We conceptualize this knowledge as NGO knowledge for localizing SD programs, which refers to the application of the NGO's experience in developing projects with poor suppliers and supply-market knowledge in adapting each SD program to the individual supplier's reality (see Table 4.7).

Localizing a SD program entails designing and implementing it in a way that couples with the idiosyncrasies of poor suppliers. Firms could have

the production and technology required to make farmers more productive, but they would not know how to transfer them to suppliers (see quote below). For instance, the NGO knew that farmers tended to overuse pesticides and herbicides and suggested addressing this issue during the training program. Furthermore, the NGO knew how suppliers carried out transactions and advised buying firms to take actions to mitigate factors such as informal money lending or lack of a tax ID. The buying firm's technological capabilities were not sufficient for poverty alleviation. The NGO's localized knowledge contributed to the SD programs, enhancing the suppliers' operational efficiency and reducing transaction risks.

“Mostly the company has the knowledge...I think the company does have the technological knowledge on best practices, input production, increasing quality of production, and increasing volumes. They would know that. However, they wouldn't know how to bring that to small producers and low-income communities. I think this was one of the roles of the NGO, to make sure that the company actually contacted small producers and transferred their knowledge when small producers needed it.”  
*NGO regional director*

<b>Table 4.7: Resources for the Implementation of SD Programs</b>		
<b>Resources</b>	<b>Definition</b>	<b>Exemplar quotes</b>
NGOs knowledge for localizing SD programs (stage t)	This refers to the application of NGO's experience in developing projects with poor suppliers; and knowledge about the supply market to adapt SD programs for coping with suppliers' reality.	<p>"The company has the technological knowledge, background and staff for doing this [the SD program]. I think in terms of knowledge transfer, the knowledge input from the NGO was to make sure that the existing knowledge of the company was actually put in use for the producers in low income communities" <i>NGO director for Latin America</i></p> <p>"...we accepted and began to work on a project in which we had the corn know-how, and they [the NGO] supported us in the aspects of setting the training topics, how to gather the farmers for the training program, and how to work with them in general" <i>CSR Director—Corn Farming instance</i></p>
NGO bridging capability (stage t)	This refers to the NGO's ability to apply its network resources and knowledge about poor suppliers to join previous disconnected actors and to strengthen the relationship between the buying firm and poor suppliers.	<p>"The advantage of the NGO was their support in getting economic resources. This helped us to accelerate the process of training our suppliers. Additionally, they helped us to get other type of resources for implementing best practices with the farmers." <i>Manager SD Development—Dairy Farming instance</i></p> <p>"We gave advice to the companies. We connect them with sources of funding, donations, multilateral banks, development banks for the business initiatives." <i>NGO Regional Sub-Director</i></p>
Organizational routines to transfer know-how (stage t+1)	This refers to buying firm's organizational processes to transfer know-how. It includes technical assistance to suppliers; suppliers' visits to buying firm's facilities; and suppliers' events.	<p>"We organize several events a year in one of our plantations. One of the main events is the <i>golden ear</i>, where we set up demonstrative plots so the farmers could see, ask questions and learn farming best practices. In those events, we also teach them our technological packages, which include nutrition, and reproduction materials. At the end of the event we deliver prizes for the farmers with the highest yields." <i>Supervisor SD program—Corn farming instance</i></p> <p>"Our job is not to buy scrap; our real deal is to support the consolidators. My business is not to buy tons from the consolidators; my focus is to see what they need; to understand why they are collecting fewer tons; and in the case of any incidence I sent my supervisors to the zone to understand what's happening in the market." <i>Recycling division director—Metal scrap collectors instance</i></p> <p>"Through September 2012, there are 33 demonstrative farms in 15 cooperatives. The company offers direct and indirect support to 1,085 farmers and has selected a group of farmers for a guided visit and training abroad." <i>Extract from a company report—Dairy farming instance</i></p>

**Table 4.7 continues**

<b>Resources</b>	<b>Definition</b>	<b>Exemplar quotes</b>
Logistical resources in the buyer-supplier relationship (stage t+2)	This refers to the logistics assets and infrastructure of the buyer-supplier relationship that ease the delivery of products to the buying firm and the payment to suppliers; it includes warehousing, information technology and buying firm assistance.	<p>“The transaction with the cooperatives work in this way: every farmer carries the milk to the cooperative’s consolidation center. Then, we go with our trucks and pick it up from every center and carry it to our plant “ <i>Manager SD program—Dairy farming instance</i></p> <p>“In the business of potato farming, it was very difficult to consolidate the production in one place. The trader coordinated a date for sending a truck and picking up the cooperative’s production. In this case, the cooperatives didn’t have warehouses. We thought at some point to support the creation of a warehouse within the cooperative but there weren’t the minimum production volume to make it work.” <i>NGO advisor—Potato farming instance</i></p>
Relational contracting based on procedural fairness (stage t+2)	This refers to the relational attribute of the buying firm to display transparent, ethical, unbiased and representative deals to suppliers; it entails an open and transparent process of delivery, and an unbiased pricing for the products.	<p>“We manage a quality based pricing system in order to determine a fair price. We consider the fat, protein, CCS, UFC, the milk temperature, which allow us to pay fair prices and higher than the industry average” Extract from a Sustainable report- <i>Dairy Farming instance</i></p> <p>“We offer technical assistance throughout the whole year, we guarantee the purchase of all their production volume according to the official price.” <i>Purchasing Manager—Corn Farming instance</i></p>

Source: Elaborated by the author.

#### 4.5.1.2. NGO's Bridging Capability

In addition to localizing the SD program, the NGO was a bridge to resources for the poor suppliers and the buying firms. We observed two mechanisms by which the NGO bridged resources: (1) bridging between buying firms and sources for funding; and (2) creating/strengthening ties between poor suppliers and buying firms.

The buying firms' managers considered investing in SD programs for poverty alleviation as too risky. As one of the managers noted, the financial resources from the multilateral bank made the risk more bearable: "We are a small company, so we didn't have the resources to train 200 or 300 farmers. The advantage with the NGO was the economic resources that we could access for accelerating the training program." *SD program leader—Dairy farming instance*. Due to its experience in fundraising, the NGO had ties—network resources—that were used to obtain the financing to implement the SD programs. The NGO was a bridge between the buying firms and sources of funding.

Furthermore, the NGO created or strengthened the ties between poor suppliers and the buying firms. For instance, the NGO visited the potato farmers' village, established links with their leaders, and put them in contact with the buying firm. The NGO took similar actions in the case of palm tree farming. We observed that this NGO capability was also applied to strengthening existing ties between the buying firms and the poor suppliers. For example, in the corn farming case the NGO set up a mechanism so the buying firm could strengthen their relationships with poor farmers. Similar actions were implemented by the NGO in the case of the carpentry workshops and dairy farming.

Consequently, the NGO consistently applied the bridging resource to implement the SD programs for poverty alleviation. We conceptualize this resource as a capability because it reflects a set of the NGO's organizational processes that utilize its knowledge of poor villages to join disconnected

parties and to strengthen weak connections between parties. We call this resource a bridging capability.

This bridging capability reduced the buying firms' transaction costs when dealing with poor suppliers (see Table 4.7). First, the buying firms were connected with sources of funding reducing the cost of coordinating the training programs (see quote below). Second, the bridge between buying firms and poor suppliers reduced the coordination costs of searching for each other in order to undertake a cooperative buyer-supplier relationship.

“I think we brought certain things to the table that they didn't have that were very specific to our background as a development organization. I think for some companies was the fact that we brought the multilateral bank that was able to provide some seed funding. These were not large amounts but were often enough to boost the company upward to the side of wanting to do this project” *NGO regional director*

#### **4.5.2. Resources Provided by the Firms**

The NGO contributed both knowledge for localizing SD programs and the bridging capability to all of the instances. Yet the results across the 6 instances were not the same. The buying firm-related resources were also needed to reduce poverty. The buying firm-related resources were conditional to the NGO's resources. Managers decided to invest in the project only after they became aware of the funding from the multilateral bank and/or the business case for the project was made. This section presents those buying firms-related resources that enhanced the SD program outcomes. These resources emerged in stages t+1 and t+2.

##### **4.5.2.1. Knowledge Transfer Routines**

In all 6 instances the SD program included a training program to improve the operational capabilities of the poor suppliers. One of the conditions of the multilateral bank for funding the project was that a third party had to implement the training program. This did not mean that the NGO and the buying firms' personnel could not be involved in the training

program. However, the funding could not be used to remunerate the buying firms' personnel. In every instance, the NGO and the buying firm decided the topics to include in the training program and selected a suitable third party to run it. The use of third party providers caused tension within the buying firms for corn farmers, dairy farmers, and metal scrap collectors, because these buying firms already had routines to transfer production know-how to their suppliers, and they would have preferred to spend the money on their own resources. However, the NGO and the buying firms found ways to complement the third-party training program with the buying firms' routines.

The training programs included field activities and workshops. For instance, corn farmers had training sessions on farming best practices, dairy farmers were trained about animal reproduction, milking routines and grass farming, and potato farmers received field training on best practices in soil preparation, and crop management (see Table 4.7). Furthermore, for the metal scrap collectors, corn and dairy farmers the training was reinforced through additional supply management practices of the buying firms such as assessment and technical assistance. The assistance the corn farmers received included technical visits from the buying firm personnel and the provision of certified seeds, production inputs and light equipment for cropping. The buying firm also arranged events for the corn farmers where they could observe best farming practices and interact with other farmers (see Table 4.7).

The complementary nature of these practices became evident when we contrasted the cases of corn farming, dairy farming, and metal scrap collectors against carpentry workshops and potato farming. The buying firms in the first group of instances (corn farming, dairy farming and metal scrap collectors) had a set of organizational processes that supported the transfer of knowledge of production know-how. Conversely, buying firms in the second group of instances (carpentry workshops and potato farming) did not have such processes. The buying firms in the first group of instances had better results in terms of the suppliers' operational efficiency suggesting a pattern between these organizational processes and suppliers' operational efficiency.



For example, in the case of dairy farming, the buying firm had a technical assistance program, where veterinarians conducted regularly scheduled visits to the farmers to assist them with animal reproduction and health-related problems. In the case of metal scrap collectors, the buying firm had industrial marketing routines which provided the collectors with market information so they could offer better deals and increase their collected volume of scrap. However, in the second group of instances, buying firms had scarce resources and they relied on ad-hoc visits or unstructured mechanisms, where a community leader was delegated to follow up the training program. The lack of organizational follow-up processes in these instances impeded the momentum for improving suppliers' operational efficiency.

The routines described above are similar to the activities defined in the SD literature as operational knowledge transfer activities (Modi and Mabert, 2007), but the activities in our data are not strictly operational. Consequently, we use a broader label and name them knowledge transfer routines. We conceptualize this resource as an organizational routine because the buying firms that possessed these resources were able to deploy them repeatedly to consistently improve suppliers' operational efficiency (see Table 4.8). This resource emerged during the SD implementation (stage t+1) of the timeline, often during the suppliers' training program. Knowledge transfer routines were associated with the improvement of suppliers' operational efficiency.

However, we observed that the buying firms with knowledge transfer routines had either limited access to suppliers or the scope of their practices alone was insufficient for the suppliers' reality. In some instances buying firms were able to implement SD programs with a few farmers' cooperatives but that would have not been enough for their sourcing needs. In other instances (e.g. metal scrap collectors) they could only partially address the suppliers' problems. Consequently, even in the instances where buying firms had knowledge transfer routines, the NGO's resources were required because they amplified the buying firms' routines by including more suppliers and/or broadening their scope. Therefore, we conclude that knowledge transfer routines complement the NGO's resources and enhance suppliers' operational efficiency.

#### **4.5.2.2. Logistical Resources in the Buying Firm-Supplier Relationship**

Once the training program was implemented, the management of high numbers of low-volume transactions was a key issue in all instances. Purchasing 100 tons from 1 supplier is not the same as purchasing 1 ton from 100 suppliers; the buying firm receives 100 smaller batches and makes 100 payments. In successful instances, this situation was addressed in the SD implementation and transactions stages (stages t+1 and t+2) either through adapting existing or investing in new logistical resources.

For instance, the dairy farming buying firm had established routes for picking up milk from cooperatives in a 50 km radius around their plants. The new dairy farms could easily be added to existing routes. Additionally, the buying firm also invested to create or enhance consolidation centers (i.e. tanks, labs, etc.) where the buying firm would send their trucks every 2 days to pick up the consolidated milk.

In the case of corn farming, the buying firm had a warehouse close to the poor farmers' region and each farmer was within 50 km of the warehouse. Moreover, the buying firm allied with a local bank to open a special account for the corn farmers to ease payments. In the case of the metal scrap collectors, the buying firm invested in truck-weighing scales and trailer platforms at each supplier to facilitate the handling of scrap and the delivery to the buying firm's production facilities (see Table 4.7). On the other hand, the buying firm in the potato farming instance did not invest in logistical resources. The company lacked warehouses, information systems or any other asset that could be adapted to collect or receive the production from suppliers, or to make prompt payments to suppliers. Because the cooperatives also lacked warehouses, the buying firm coordinated with a cooperative's representative to send a truck to collect the production of the village. However, farmers had different harvesting times, so when the truck arrived it could only be loaded with a few farmers' production, not filling the truck. Finally, farmers had to wait 15 days after delivery to receive payment when

their peers who sold to local intermediaries received payment at time of delivery.

Warehouses, information technology systems, and transportation are logistical resources provided by the buying firm that supported the buying firm-supplier relationships. Previous research defines these resources as logistics-related assets (Olavarrieta and Ellinger, 1997). We follow this logic and define logistical resources as assets, infrastructure, and information technologies that facilitate production or delivery to the buying firm and payment to poor suppliers (see Table 4.7).

Coordination costs were critical at both the SD implementation (t+1) and the buying firm-suppliers transaction (t+2). The NGO bridging capability was instrumental for initiating the project, but this capability did not enhance the transaction between buying firms and suppliers, which takes place in stage t+2. It was only when the buying firms contributed logistical resources to the buying firm-supplier relationship that the coordination costs were reduced to a point where transactions were beneficial for both buying firms and suppliers. Consequently, poverty alleviation was dependent on these logistical resources because they reduced the coordination costs.

#### **4.5.2.3. Relational Contracting Based on Procedural Fairness**

The NGO and the buying firms mitigated certain transaction risks during the SD implementation by selecting suppliers with property rights, updated tax IDs, or environmental licenses. However, the weaknesses of supply market institutions offered little enforceability of suppliers' commitments to provide their production to the buying firms. Moreover, the NGO could not advocate for an exclusive buying firm-supplier relationships, because the terms of the multilateral funding insured that poor suppliers were free to sell their production to anyone. In this context, earning the commitment of the suppliers was critical for the buying firms.

To build a strong relationship with poor suppliers, it was necessary to overcome two main challenges. The first challenge was related to the previous treatment of suppliers, who were mostly minorities or people who

traditionally had been excluded from economic activities and subject to discrimination or had received unfair treatment. The presence of the NGO ensured fair, inclusive, and respectful treatment of the suppliers. Although managers were warmer in some instances than in others the overall treatment to suppliers was appropriate.

Although the NGO presence helped to create stronger relationships, there was still a second challenge: suppliers perceived the processes of the transactions to be unfair. Some settings lacked an open, unbiased mechanism to determine the weight of the batch delivered by the suppliers or a clear and understandable pricing mechanism for the products. The fairness of the transaction needed to be addressed by the buying firms.

The lack of fairness resulted from the absence of resources to make the transaction unbiased, transparent, and representative for both the buying firm's and suppliers' not because managers aimed to take advantage of suppliers. For example, in the case of potato farming, suppliers delivered the product without knowing how much they would be paid. They knew the price only after the product was delivered to the truck of the buying firm. Sometimes the price was favorable, but at other times the buying firm's price was lower than that offered in alternative markets. Furthermore, suppliers did not know in advance the percentage of the batch that would conform to the quality standards. This was the opposite of the case of dairy farmers where the buying firm established a clear and open mechanism for pricing the milk. The price was fixed according to the official price published by the Ministry of Agriculture and the buying firm had a quality-based premium that allowed farmers to receive an additional 2-3 cents per liter. Furthermore, farmers could also see how much milk they were delivering and they knew in advance the parameters for rejecting poor-quality batches (see Table 4.8 for more illustrations). Table 4.8 shows that the buying firms who managed their transactions in a procedurally fair manner were also the buying firms to whom suppliers were more committed.

Previous research describes buyer-supplier relationships as procedurally fair when procedures and criteria for decisions are unbiased,

representative, transparent, correctable, and ethical (Luo, 2008). The observed buying firm-supplier relationships that were successful in achieving poverty alleviation were also procedurally fair. For instance, the criteria for pricing and rejecting batches were tangible and verifiable so that suppliers could easily determine the condition of their products and how much they would receive for them. Furthermore, since formal written contracts are useless in these supply markets, buying firms governed the relationship through relational agreements based exclusively on the trust that both parties would comply with what was agreed. Consequently, the governance in highly committed relationships was relational and based on procedural fairness. We considered procedural fairness as a resource because it is a behavioral trait displayed in the buying firm-supplier relationship.

**Table 4.8: Synthesis of Constructs per Case**

<b>Instances/ Constructs</b>	<b>NGO's Knowledge for Localizing SD Programs</b>	<b>NGO's Bridging Capability</b>	<b>Knowledge Transfer Routines</b>	<b>Logistical Resources in the Buying Firm- Supplier Relationship</b>	<b>Relational Contracting Based on Procedural Fairness</b>	<b>Poverty Alleviation</b>
Dairy farming	The NGO provided supply market analysis to identify cooperatives around buying firms' facilities. They also supported the buying firm to set the conditions for selecting cooperatives.	The NGO connected the buying firms to multilateral banks; this tie was further exploited to get refundable credits for farmers; support strengthening ties between the farmers and the buying firm	The buying firm had a technical assistance program where farmers were trained on enhancing the quality of the milk, grass farming; and an investment program on cooperatives' facilities.	The buying firm had established milk runs with standardized procedures for collecting the product and assessing the quality prior its load on the truck.	Transparent and unbiased mechanisms for delivery; open, quality-based pricing; payment on time; open communication with farmers.	High
Metal scrap collectors	The NGO guided the buying firm to address the socioeconomic aspects that were affecting suppliers' operational efficiency.	The NGO connected the buying firm to multilateral bank to fund the training program.	The buying firm had regular suppliers' events and had a reverse marketing program to support collectors.	Investment in truck scales, platforms to facilitate the handling of scrap.	Exact-weight pricing; market-wise prices.	High
Corn farming	The NGO advised the buying firm on how to approach poor farmers, and how to adapt their knowledge transfer routines for hundreds of farmers: they appointed farmers leaders within each village.	The NGO connected the buying firm with the farmers; and bridged the buying firm with multilateral bank.	The buying firm had standardized procedures to deliver seeds and small equipment to farmers; suppliers' events; farmers' visits to buying firm's agricultural facilities.	Warehouses close to farmers; ERP systems to coordinate payments to suppliers.	The price and the conditions for production-delivery were based on the Agricultural Ministry regulations.	High
Carpentry workshops	The NGO guided the buying firm to address the socioeconomic aspects that were affecting suppliers' operational efficiency.	The NGO connected the buying firm to multilateral banks.	Bare interaction; buying firm had none systematic activity on knowledge transfer.	No logistical challenges. There were few suppliers selected (4 workshops); and they were close to the buying firm's factories.	Open and transparent payment and production-delivery conditions.	Medium

<b>Instances/ Constructs</b>	<b>NGO's Knowledge for Localizing SD Programs</b>	<b>NGO's Bridging Capability</b>	<b>Knowledge Transfer Routines</b>	<b>Logistical Resources in the Buying Firm- Supplier Relationship</b>	<b>Relational Contracting Based on Procedural Fairness</b>	<b>Poverty Alleviation</b>
Palm tree farming	The NGO provided supply market analysis to identify farmers' cooperatives.	The NGO connected firms with cooperatives and multilateral bank.	Not applicable. The NGO project's deadline impeded the implementation of the SD program.			No results
Potato farming	The NGO provided supply market analysis to identify cooperatives around buying firm's facilities. They also supported buying firms to selecting cooperatives.	The NGO connected the buying firm to multilateral banks; and to suppliers.	Bare interaction with farmers; no established mechanisms to transfer knowledge to farmers.	Absence of warehouse, consolidation centers or any logistical resource; slow payment process.	Lack of transparency in transmitting prices information to farmers. There was also uncertainty about the rejection of defects per lot.	NO poverty alleviation

Source: Elaborated by the author.

### 4.5.3. Exploring Alternative Explanations

An alternative explanation would be that poverty alleviation was achieved in the instances where suppliers initially had higher incomes and lower transaction costs, which would mean that the theoretical framework would only apply for the least poor suppliers studied. Before the SD program, farmers in the agricultural instances were poorer and had higher transaction costs than suppliers in the non-agricultural instances. Nevertheless, the results show that poverty alleviation was achieved in both agricultural and non-agricultural situations, suggesting the findings are robust to a range of initial poverty conditions. Furthermore, we checked the national production trends for the various crops and observed that the slope of growth was higher for the farmers involved in the SD programs than the country's average. This allows us to discard an exogenous shock that improved the country's overall production as an explanation for the results.

Additionally, buying firms might have cooperated with the NGO mainly to obtain the legitimacy benefits that such a partnership offers without actually tightly coupling their resources with the NGO's (Meyer and Rowan, 1977). If this was the case, then the buying firm's resources should be sufficient to achieve the synergy between economic and social performance in context of poverty alleviation. In the metal scrap collector instance, the buying firm had developed suppliers without the intermediation of the NGO. However, the NGO still contributed to broadening the scope of the assistance to these suppliers, which enhanced the social sustainability of the supply chain. In this instance, the NGO's resources were less synergy-sensitive, illustrating that buying firms can to some extent achieve synergy between social and economic performance. Unilever and Nestle have been able to achieve similar synergies (Nespresso, 2014; Unilever, 2014). However, in the other instances where poverty was also alleviated, the buying firm perceived the SD program as too risky and costly to do on its own. The buying firms in these instances only engaged in SD after the NGO contributed its resources and synergy was only achieved after both entities had contributed resources. This indicates that the complementarity between the NGO's and the buying

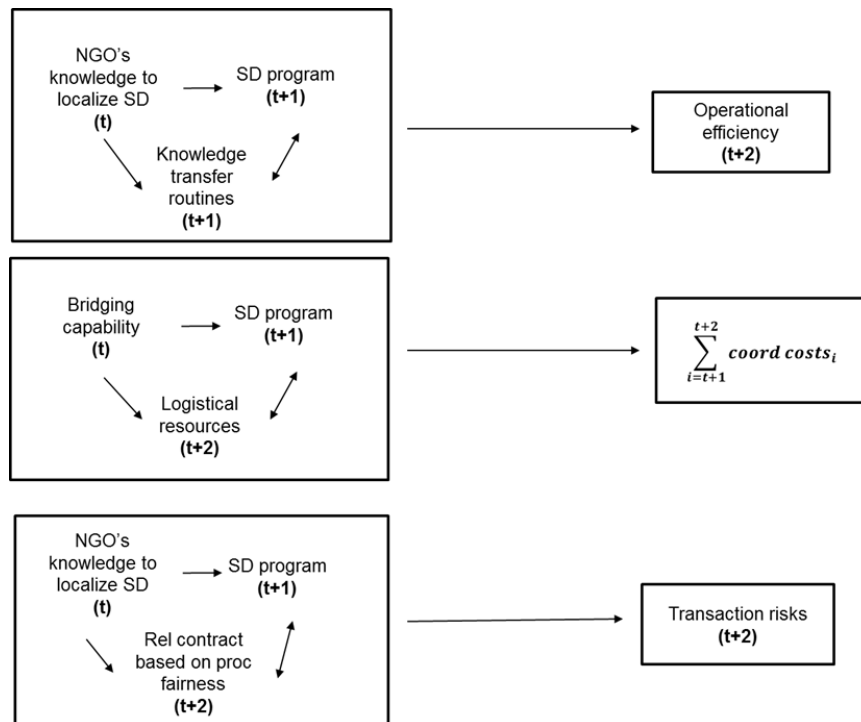


firms' resources might be contingent on other factors such as perceived legitimacy benefits. This is a limitation of the study that future research should take into account.

#### 4.6. Discussion

The resources identified in this research indicate the role that both NGOs and buying firms have in the process of incorporating poor suppliers into supply chains. The NGO-resources were critical for designing and setting up the SD program to meet the needs of the supply market reality. The buying firm-resources were critical to carry out the transaction and protect the value created in the buyer-supplier relationship. The resources provided by each organization serve different purposes at different stages of the process; they are inter-temporal complements that alleviate poverty through supply management initiatives (see Figure 4.2).

**Figure 4.2: Theoretical Framework of the Resources for Implementing SD Programs for Poverty Alleviation**



Source: Elaborated by the author.

This research provides a framework that explains how non-economic actors contribute to the creation of innovative, socially sustainable supply chains using traditional supply management practices. Previous literature has either suggested that firms must develop relational capabilities to manage stakeholder pressures (Klassen and Vereecke, 2012; Matos and Silvestre, 2013) or that collaboration with non-traditional members such as NGOs might be a key component of sustainable supply chains (Pagell and Wu, 2009). However, the literature has not contemplated the possibility that non-traditional chain members could be actively engaged in sustainable supply chain projects themselves. This research contributes by identifying and conceptualizing the resources that allow NGOs to design and set up SD programs that alleviate poverty. Hence, we put forward the following propositions:

*P1: NGOs enhance the operational efficiency and reduce the transaction risks of poor suppliers through their knowledge to localize SD programs.*

*P2: NGOs reduce the coordination costs of transacting with poor suppliers through their bridging capability, which connects suppliers with buying firms, and buying firms with funding sources.*

The idea that NGOs span holes in the supply networks of developing economies has been acknowledged in previous research (Hahn and Gold, 2014). For instance, scholars from business & society define bridging organizations as those who extend ties among organizations from different domains and allow the coordination of collective actions to cope with social problems that go beyond the scope of single organizations (Brown, 1991; Westley and Vredenburg, 1991). This type of organizational form emerges either as a joint effort of a set of organizations or as the role adopted by a specific organization (Arenas et al., 2013; Westley and Vredenburg, 1991). Similarly, social network scholars use the term *tertius iungens* (i.e., the third who joins) to describe a strategic and behavioral orientation toward connecting members of a given social network (Obstfeld, 2005). In both cases, these conceptualizations depict the bridging phenomenon as something

that an organization with certain structural network properties such as betweenness, centrality, or a node bridging a structural hole does. Our conceptualization of bridging capability adds precision to the understanding of this phenomenon.

Prior research on SD programs was instrumental for our interpretation process since our coding/resource list was built on this literature. SD programs are supply management practices that are usually studied within the realm of lean supply management, quality management or continuous improvement programs (Modi and Mabert, 2007). Typically the main objective of these practices is improving the production performance and quality of suppliers (Krause et al., 2007). Additionally, SD programs have also been studied as mechanisms to expand sustainability practices along the supply chain (Gimenez and Tachizawa, 2012). Although the relational aspects of the SD programs such as relational social capital and relational norms of governance have been found as suitable mechanisms to govern transactions (Krause et al., 2007), this type of practice had not been studied from the perspective of NGOs, nor had its impact on social outcomes been assessed. Our results contribute to the SD literature, suggesting how SD programs can be deployed by NGOs for poverty alleviation purposes.

Our theoretical framework depicts the relationship between SD programs and poverty alleviation (see Figure 4.2). First, managers committed their resources to the project only after they realized the contribution of the NGO. Thus, the commitment of the NGO's resources lead to the commitment of a buying firm's resources. Second, both the NGO and the buying firm created a third element; the SD program, which was designed to enhance the operational efficiency and reduce the transaction costs of poor suppliers. However, this third element was effective only when it was implemented jointly with the NGO and buying firm's resources (see Figure 4.2). This suggests that the effectiveness of this type of project rests on the complementary effect between these NGO and buying firm resources. This complementary effect entails a dynamic relationship between the NGO's resources, the buying firm's resources, and the SD program. Therefore, enhancing poverty alleviation is about the dynamics between (1) the NGO's

knowledge to localize the SD program and its bridging capability; (2) the buying firms' knowledge transfer routines, logistical resources, and relational contracting based on procedural fairness; and (3) the SD program. Based on these arguments we develop the following propositions:

*P3: Operational improvement of poor suppliers is achieved when a buying firm's knowledge transfer routines interact with the SD program, and the NGO's knowledge to localize the SD program.*

*P4: Coordination costs of transacting with poor suppliers are reduced when a buying firm's logistical resources interact with the SD program, and the NGO's bridging capability.*

*P5: Transaction risks with poor suppliers are reduced when a buying firm's contracting based on procedural fairness interacts with the SD program, and the NGO's knowledge to localize the SD program.*

Previous research suggests that the supply chain management field would benefit from studies addressing how partnerships create extended value in the supply chain (Priem and Swink, 2012). Resource based theories are used in supply chain research to explain how firms leverage their internal and supply-chain resources to achieve competitive advantage (Barney, 2012; Hult et al., 2006; Russell Crook and Esper, 2014). Our paper describes "how", and "why" NGOs use their own resources and leverage firm's resources to enhance social sustainability in the supply chain. The logic of resource based theories also works in a broader sense of value creation, including how non-economic actors identify, orchestrate, and allocate resources to achieve their organizational goals. Consequently, our research also contributes to the supply chain management literature by addressing how partnerships create extended value.

The identification of these resources has two main implications for the literature on cross-sector partnerships and BOP. First, our research incorporates the suggestions made by previous research (Ansari et al., 2012; Kolk et al., 2014; Sodhi and Tang, 2014) and proposes a theoretical framework of the resources used to undertake supply management practices

for poverty alleviation. We contribute by specifying how NGO-led initiatives can create business models in which poor suppliers are integrated into supply chains. Second, previous research has suggested that business relationships in this context should be managed through informal mechanisms of socialization and social capital (Hahn and Gold, 2014). Our research adds precision by indicating that relational forms of governance based on procedural fairness contributes to reducing the transaction risks in buyer-supplier relationships.

## **4.7. Conclusions**

This research provides evidence of the resources applied by NGOs to implement programs that enhance the supply chain's social sustainability without creating trade-offs between social and economic outcomes. It has also identified the buying firm resources that complement the NGO in the process. Accordingly, based on our results managers will need to take into account the following when considering such partnerships. First, engage with partners who can connect the firm with a pool of resources that it cannot presently access. Second, your resources will need adaptation to the local context before undertaking any supply management initiative with poor suppliers. Third, invest in knowledge transfer routines and logistical resources in order to successfully integrate poor suppliers. Finally, govern buyer-supplier relationships through relational mechanisms based on procedural fairness.

This research is not free of limitations. Our research design included a multinational NGO, six buying firms and suppliers operating in the same country. This increases our framework's internal validity, but it also weakens the generalizability of the results. Future research examining different NGOs or countries could add the "when" and "where" to our theoretical framework. Furthermore, our results should be tested in a larger empirical setting; future researchers should undertake field experiments in which the variables observed in this study would be measured quantitatively. These limitations also constitute specific opportunities for broadening our knowledge about the topic. We end this research with the presentation of four lines of future inquiry that can be pursued after this research: NGO-related, buying firm-related, supply-related, and context-related lines of research.

#### **4.7.1. NGO-Related Future Research**

The results suggest two main paths for future research on the supply chains of NGOs and other non-profits. First, future research should build directly on this study. The antecedents, evolution, and outcomes of the bridging capability are topics that deserve more attention. Prior to quantitative measurement of this construct, more exploratory research is needed to better understand its underlying dimensions. Future research should address questions such as how this capability is developed and what contextual factors trigger the development of such capability.

The second pathway for future research is much broader. The research helps to lay the foundation for future research on the supply chains of organizations that do not have profit maximization as their primary motivation. This research shows that NGOs can make use of traditional supply chain management practices. However it is likely that because NGOs have different orientations that they would use other practices or have different outcomes from previously identified practices. Future research needs to explore this possibility. And in so doing it is possible that practices that are used by NGOs and the like could also be used by for profits to help them become sustainable. The study of the supply chains of these “non-traditional” supply chain members is then an area that deserves study on its own and which might also contribute to making traditional for profit supply chains sustainable.

#### **4.7.2. Buying Firm-Related Future Research**

The focal organization of this research is the NGO, and our main focus is on poverty alleviation. Nevertheless, buying firms are profit-driven organizations and the poverty alleviation projects they engage in have to be business-sound. The analysis offers some qualitative insights about the benefits of poverty alleviation for the buying firms. In the successful instances of poverty alleviation, buying firms increased both the number of poor suppliers used and the volume purchased from these suppliers. This reduced their lead times and increased their control over the supply network. Still,

future research should analyze the specific mechanisms of value capture for buying firms from this type of initiative.

To achieve social sustainability buying firms use both financial and intangible resources, such as organizational capabilities and knowledge, to complement NGOs resources. However, this research did not address the conditions under which these resources could be combined. For instance, there might be institutional forces, firm-NGOs cultural differences, or inconsistencies in organizational structures that need to be addressed. Future research should also study the contingencies that allow the combination of resources between these organizations.

### **4.7.3. Supply-Related Future Research**

In most instances, the NGO project entailed the disintermediation of traders in the supply chain. This could be interpreted as a zero sum game, where the benefits of the poor suppliers are losses for the traders eliminated. From the data collected we speculate that the organizations directly and negatively affected by these projects were international traders. Ecuador is a country with a production deficit in the products considered. Therefore, what the buying firms now buy from local poor suppliers is likely no longer bought from these traders who sourced internationally. Future research should analyze the net effect of this type of initiative on the whole supply network.

Moreover, the use of SD programs for poverty alleviation opens the door to explore other supply chain practices that can be adapted for social issues. For instance, future research might study how ERP systems or any other IT-enabled coordination system could enhance the supply chain's social sustainability. IT could improve the transparency and openness of the processes, which could enable procedural fairness in buyer-supplier relationships.

Finally, an unavoidable question is what happens to poor suppliers after the NGO initiative ends. Our research suggests that relational contracting capabilities based on procedural fairness are associated with reduced transaction risks. This implicitly suggests that these firm capabilities are the

basis of long-term relationships. However, it is unknown whether poor suppliers are better off under long-term relationships with the buying firm or whether their new capabilities would be better off in the market. Future research should address this issue via longitudinal studies in which suppliers can be traced.

#### **4.7.4. Context-Related Future Research**

Two issues in the regulatory environment of Ecuadorian agricultural supply chains, which are common in Latin American economies (Romig, 2011), might affect the generalizability of the results: government-price fixing and international trade barriers such as quotas and tariffs. On one hand, trade barriers are added to the costs of importing raw materials and put pressure on local producers to develop local suppliers. On the other hand, government-price fixing fosters the emergence of black markets led by traders who generally offer lower prices than the fixed price, which discourages managers from undertaking long-term agreements with suppliers. Our results are embedded within this tension and it is unknown what the buying firms would have done if this tension was not present. Consequently, future research should consider the tension between government-price fixing and trade regulation on the decision of managers to engage in supply chain projects with poor suppliers.

Finally, based on the 2014 corruption index of Transparency International, Ecuador is slightly more corrupt than the global and Latin American median country. Ecuador has a score of 33, the global median is 38, and the Latin American median is 36 (Transparency-International, 2015). Although corruption increases the costs of doing business (Yermo and Schoreder, 2014) the lack of institutions is the major barrier to implementing projects that incorporate poor suppliers into supply chains (De Soto, 2000). Corruption-associated costs are general to all business activities and not specific to businesses with poor suppliers. Previous studies on BOP initiatives have labeled the lack of institutions as institutional voids (Parmigiani and Rivera-Santos, 2015). Parmigiani and Rivera-Santos (2015) have suggested that managers should find mechanisms to fill these voids. They also suggested



that alliances between public organizations and NGOs are a mechanism to cope with them. Consequently, an interesting future line of research is the interaction between the resources identified in this research and the environmental dynamics of institutional voids.



## **Chapter 5. Environmental Innovation is a Process, not a Destination: The Mediating Effect of Process Innovativeness between Innovation Resources, Stakeholder Relationships and Environmental Innovativeness <sup>3</sup>**

### **Abstract**

Firms face ever increasing pressure to adopt environmental technologies to substitute hazardous materials, enhance energy efficiency, reduce water consumption, and change toward renewable sources of energy. But, they usually lack the knowledge to cope with these pressures. Hence, firms have to use their resources differently or bring new resources to develop environmental innovations. Previous research suggests that innovation resources such as internal R&D, external R&D, acquisition of machinery and equipment, and acquisition of patents and licenses enhance the environmental innovations of the firm. In this line, it is also suggested that certain stakeholders such as suppliers, universities and public research institutions enhance the environmental innovation of the firm. However, it is unknown how these resources should be deployed within the firm to develop the capability of the firm of undertaking environmental innovations, known as environmental innovativeness. This research uses the resource management framework to derive hypotheses about how innovation resources should be deployed in order to create environmental innovativeness. We posit that process innovativeness is a mediating variable between innovation resources and environmental innovativeness. This model is tested with German companies from the 2008 CIS survey. We found that process innovativeness successfully mediates the relationship between innovation resources, stakeholder relationships and environmental innovativeness.

**Keywords:** environmental innovativeness, process innovativeness, stakeholders' cooperation

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<sup>3</sup> Rodriguez, J.A. Wiengarten, F. (2016) "Environmental innovation is a process, not a destination: The mediating effect of process innovativeness between innovation resources, stakeholder relationships and environmental innovativeness" *To be submitted*

## 5.1. Introduction

Climate change has put pressure on managers to reduce their consumption of fossil-generated energy, to eliminate waste and residuals along their production processes, including the emissions of anthropogenic gases (Plambeck and Toktay, 2013). This entails that firms would have to adopt environmental technologies that aim at the substitution of hazardous materials, enhancement of energy efficiency, reduction of water consumption, and changes toward renewable sources of energy. Unfortunately, firms usually lack the knowledge to implement the required solutions that cope with the environment (Horbach, 2008). Those environmental innovations require knowledge that is costly to develop and whose value is difficult to appropriate (Rennings, 2000). Additionally, this knowledge spans several domains, and it is usually owned by organizations outside the industry, in fields where firms have little familiarity (Ghisetti et al., 2015). Consequently, to be environmentally innovative, firms either have to use differently their R&D resources or bring new resources.

Environmental innovation is defined as “the production, assimilation or exploitation of a product, production process, service or management or business methods that is novel to the firm [or organization] and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives” (Kemp and Pearson, 2007, p. 10). The majority of literature has focused on the characteristics that make environmentally innovative firms different from non-environmentally innovative firms (Cainelli et al., 2015; Cuerva et al., 2014; Horbach, 2008). In this sense, firms undertake environmental innovations due to pressure from the governments, consumers, and industry (Ghisetti and Pontoni, 2015; Horbach, 2008; Kesidou and Demirel, 2012); internal resources (e.g. environmental management systems, R&D investment, purchase of patents, etc.) that enhance environmental innovation (Cainelli et al., 2015); and cooperation with stakeholders (e.g. suppliers, competitors, and scientific organizations) for innovation purposes (Ghisetti et al., 2015; De Marchi, 2012). The logic behind these relationships is the resource based view. Environmental

management scholars argue that innovation resources, and cooperative relationships with stakeholders are valuable, rare, inimitable, and non-substitutable resources; which allow environmentally innovative firms to distinguish from non-environmentally innovative firms (Cainelli et al., 2015). However, there is little understanding about how firms develop the capability to undertake environmental innovations, and how firms use their resources to build that capability.

Environmental innovation is inherent to other types of innovation such as process innovation. For instance, detergent manufacturers are replacing sodium tripolyphosphate with zeolite to reduce the harmful effect that wastewater has on rivers or lakes (Lafferty, 2015). Furthermore, in its intent to deliver environmentally friendly products, Walmart offers organic cotton garments, and organic vegetables and fruits. To do so, they have to identify upstream suppliers, work with their suppliers' suppliers, and ally with third parties to certify organic practices at each link in the supply chain (Plambeck, 2012). Additionally, scholars in this area suggest that process improvement practices such as lean production and total quality management (TQM) facilitate the adoption and implementation of environmental technologies (King and Lenox, 2001a; Wiengarten and Pagell, 2012). In this sense, we argue that the capacity to environmentally innovate (environmental innovativeness) is related with the capacity of the firm to innovate processes (process innovativeness); and that innovation resources and the relationship with stakeholders affect the firm's environmental innovativeness through process innovativeness. Therefore, the research question of the paper is: Does process innovativeness mediate the relationship between R&D resources, stakeholder relationships, and environmental innovativeness?

The present research builds upon the advancement of the resource based view and stakeholder theory. We use the resource management framework proposed by Sirmon et al. (2007) to derive hypotheses about the relationships between innovation resources, process innovativeness, and environmental innovativeness. We find that environmental innovativeness is developed through the bundling of process innovativeness and the resources brought from the cooperation with public research institutions. In addition, internal

R&D, external R&D, acquisition of machinery, and cooperation with suppliers for innovation are bundled into process innovativeness. These results contribute to existing literature in environmental innovation by adding precision of how resources are deployed to build capability to environmentally innovate. We also bridge the literature of operations management and environmental innovation, suggesting that process-related capabilities to innovate are related with environmental innovativeness. Finally, after addressing the limitation of how resources are allocated (Kraaijenbrink et al., 2010), we find that the resource based logic is useful for explaining environmental innovativeness.

The remaining of the paper is structured in the following way. First, we present the revision of the literature, where we identify the gaps in the literature and explain how our research is contextualized. Then, we present the resource management framework, and combine it with the literature of lean production to derive the hypotheses of the study. Next, we explain the methods used to test the hypotheses, and the results. Finally, we discuss our results and provide some conclusions.

## **5.2. Literature Review**

The literature review is structured into three parts. First, we describe what previous literature has found about the drivers of environmental innovation. Second, we present the concept of environmental innovativeness and how it relates to prior research on environmental innovation. Finally, we describe the antecedents of firm's innovativeness.

### **5.2.1. Antecedents of Environmental Innovation**

Environmental innovation entails the development or adoption of products, processes, services, or business methods that result in reduction of environmental risk, pollution or other negative impact on the environment (Kemp and Pearson, 2007). Although environmental innovation also entails the introduction of novelty within the firm, it has a double externality which make it different from traditional innovation. First, unless there is regulation to internalize the cost of environmental harm, firms have the incentives to

keep old technology; second, environmental innovations have a positive spillover during the diffusion phase of the innovation, the cost of adoption for later adopters is lower than for early adopters (Rennings, 2000). Consequently, firms have difficulties to appropriate economic value from environmental innovations. In this sense, in addition to traditional drivers of innovation such as technology push, and market demand, government regulation is also a key driver of environmental innovation (Ghisetti and Pontoni, 2015).

Technology push drivers refer to the resources and capabilities of the firm (e.g, organizational and technological capabilities) that enhance energy and material efficiency, product quality, etc. (Rennings, 2000). In this sense, previous studies have found that R&D resources such as internal R&D, acquisition of patents and licenses, acquisition of new machinery and equipment, etc. are positively related with environmental innovation (Cainelli et al., 2015; Horbach, 2008). Additionally, environmental innovations require resources that are outside the boundary of the firm and the industry. In this sense, R&D cooperation with universities, public research organizations and suppliers is relevant for undertaking environmental innovations (Ghisetti et al., 2015; Horbach et al., 2013; De Marchi, 2012). Scientific organizations (e.g. universities and public research organizations) possess highly specialized human capital, distant and different knowledge from industry, and the capability and time to developing costly technology with longer time-to-market (Agrawal, 2001; Baba et al., 2009). Suppliers are responsible for a considerable amount of the firm's impact on the environment, for instance, scope 3 emissions (e.g. the emission by the parts of the supply chain) account for the majority of company's total greenhouse gas emissions (Downie and Stubbs, 2013). In this sense, cooperation with suppliers is relevant to deliver eco-friendly products and services (Ghisetti et al., 2015; De Marchi, 2012; Seuring and Müller, 2008).

Market pull drivers refer to consumer's preferences, industry norms (e.g., codes of conduct), and new markets' characteristics that move firms to undertake environmental innovations (Kesidou and Demirel, 2012). For instance, consumer's preference for hybrid cars have increased in the last few

years. From 2014 to 2020, the growth rate of the global automotive market is expected to increase at a slower pace than the segment of hybrid vehicles; the current penetration in the overall automotive production is between 3% and 5%, when in 2012 it was below 2% (Future-Market-Insights, 2014). This shift in the preference of consumers has moved car manufactures to adopt technologies on rechargeable batteries and other technologies that reduce negative car's impacts on the environment. These observations are empirically supported in the literature, Keisidou and Demirel (2012) found that firms initiate eco-innovations to satisfy minimum customer's and society's requirements.

As mentioned above, governmental regulation for environmental innovation is required because managers lack the incentives to implement newer technologies that ameliorate the impact of business operations on the environment. In this sense, previous studies found that policy on environmental matters induce managers to undertake environmental innovations (Ghisetti and Pontoni, 2015). Policy on environmental matters entails a number of elements such as strictness, enforcement, sectoral differences, and credibility of the commitment to standards. In this sense, previous studies classify policies into stringent policy, and incentives to innovate such as: subsidies, grant, tax exemptions, etc. The evidence suggests that stringent policies are more efficient than financial incentives to influence environmental innovation (Ghisetti and Pontoni, 2015).

Summarizing, firm's R&D resources, consumer's requirements, and governmental regulation explain environmental innovation. Yet the literature of environmental innovation has emphasized the resources needed, and external conditions that enhance firm's environmental innovation, but it is little researched how those resources are combined into firm's capabilities for developing environmental innovation.

### **5.2.2. Environmental Innovativeness**

The phenomenon of developing or adopting novel products, processes, organizational procedures or business methods that reduce the impact on the



environment is generally studied under the label of environmental innovation. Although, there are papers that also use the term innovativeness (Ghisetti and Pontoni, 2015), the majority of literature focuses on the characteristics that make environmentally innovative firms different from non-environmentally innovative firms (Cainelli et al., 2015; Cuerva et al., 2014; Horbach, 2008). However, these studies generally qualify firms as environmentally innovative to those who have registered a patent within a period of time, or have declared that an environmental innovation was adopted or developed in a given time. Certainly an innovative firm introduces innovations, but not every firm that introduces innovations is innovative (Garcia and Calantone, 2002). In this sense, innovativeness and innovation are conceptually different terms, but that are often used interchangeably in the literature of environmental innovation.

Innovation is the iterative process of developing inventions that respond to market opportunities and at the same time are successfully produced and commercialized (Garcia and Calantone, 2002). On the other hand, innovativeness refers to the firm's inclination to adopt new ideas that lead to the development of new products, processes, or organizational procedures. In this sense, innovativeness precedes innovation (Hurley and Hult, 1998; Tsai and Yang, 2013). Firm's innovativeness is operationalized either as an organizational cultural trait, or as a firm's capability (Hurley and Hult, 1998; Rubera and Kirca, 2012). Nonetheless, in both operationalizations cultural trait and firm's capability, innovativeness is described as a collective action which coordinates the knowledge and expertise of employees to foster the invention of products, services and processes (Hurley and Hult, 1998; Rubera and Kirca, 2012; Tsai and Yang, 2013). Given that a firm's capability is the ability to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving an objective (Helfat and Peteraf, 2003), and that organizational culture is considered a resource, we operationalize innovativeness as a capability of the firm

Differentiating between environmental innovation and environmental innovativeness adds precision to the study of eco-innovations because using innovativeness instead of innovation allow researchers to better understand

what processes and resources environmentally innovative firms use to consistently develop innovations that reduce negative impact of the firm on the environment. However, previous research hasn't observed environmental innovation through the glasses of firm's capabilities. This research fills this gap in the literature, and following prior research on innovativeness, it defines environmental innovativeness as the firm's capability to adopt and/or develop product, processes, services and organizational procedures that reduce the firm's negative environmental impact.

### **5.2.3. Determinants of Environmental Innovativeness**

Previous literature on environmental innovation suggests that relationship with suppliers, universities and public research institutions, R&D investments, employee training, and acquisition of patents and licenses, also called hybrid resources, are determinants of environmental innovation (Cainelli et al., 2015; Ghisetti and Pontoni, 2015; Ghisetti et al., 2015; Horbach et al., 2013). These findings consider environmental innovation as an outcome rather than a capability; they derive their hypotheses from the resource based view and argue that firms having an internal base of knowledge and skills are more likely to realize environmental innovations. However, these studies offer no explanation of how those resources have to be deployed in order to develop the capability of environmental innovativeness.

Moreover, prior studies on firm's innovativeness are grounded on the paradigm of traditional innovation, where innovation pursue profits and financial performance (Garcia and Calantone, 2002; Rubera and Kirca, 2012). In this paradigm, innovativeness is a conduit, a mediating variable between cultural traits of the organization and firm's performance. In this sense, firms deploy its resources, behaviors and routines into the process of developing new products, services, and processes, which allow firm to gain competitive advantage. However, the logic of environmental innovation is different. Firms deploy resources to optimize energy consumption, reduce anthropogenic gas emissions, waste, etc. in order to comply with stakeholders beyond customers (Kemp and Pearson, 2007; Rennings, 2000). In this sense, the deployment of

resources, behaviors, and routines that antecede environmental innovativeness is more complex than in the situation of economic innovativeness. Consequently, the antecedents of firm's innovativeness identified in previous studies might be useless for explaining environmental innovativeness. Therefore, another theoretical framework is needed

### **5.2.3.1. Firm's Process Innovativeness as a Conduit for Environmental Innovativeness**

The relationship between process improvement practices and environmental performance is well studied in the operations management literature. Investment in environmental technologies, environmental management systems, and process improvement techniques such as lean production and TQM can enhance the environmental performance of the firm, which in turn can also enhance operational performance (Curkovic et al., 2008; King and Lenox, 2001a; Wiengarten and Pagell, 2012). The literature of operations management uses the concept of environmental technologies and management practices to refer to investments in operations or management practices that involve changes on primary business processes to reduce the negative impact of the firm on the environment (Klassen and Whybark, 1999). On the other hand, the literature of environmental innovation defines environmental innovation as the development, adoption or exploitation of new products, processes, or business methods to the firm that reduce the negative impacts of the firm in the environment (Rennings, 2000). Thus, both literatures refer to the same concept, environmental innovation, when the environmental technologies and management systems are new to the firm.

One of the key findings in the operations management literature is that lean production and TQM practices facilitate the implementation of environmental technologies (King and Lenox, 2001a; Wiengarten and Pagell, 2012). Pollution can be seen as an inefficiency within a production system. Therefore, managers could apply their organizational knowledge on lean or TQM to tackle the environmental performance of the firm (Rothenberg et al., 2001). Moreover, lean production practices facilitate the adoption of

environmental technologies because it reduces the marginal cost of implementation and the cost of discovering opportunities (King and Lenox, 2001a). For example, lean production enables the development of improvement capabilities, reduces the level of inventories, and increases the awareness of employees about changes in the production process. Thus, the cost of additional training on environmental matters would be lower. Additionally, a priori expectation and search costs could inhibit managers to discover opportunities to reduce environmental pollution. Hence, lean firms are more likely to have information about the indirect distributed costs and benefits of environmental management systems (King and Lenox, 2001a). Consequently, firms with process improvement capabilities, such as lean production, are more likely to adopt environmental technologies (Lee and Klassen, 2015).

Furthermore, environmental innovations entail product, process and organizational innovations (Rennings, 2000). Considering the findings from previous operations management literature, and the definition on environmental innovation, it seems that firm's environmental innovativeness is positively associated with process innovativeness. Process innovativeness refers to the capability of a firm to engage in and support new ideas, experimentation, and creativity for the development of new processes (Das and Joshi, 2007). This logic is reasonable because a firm that consistently introduces environmentally innovation requires changes in the processes of sourcing raw materials, the equipment and facilities for storing inventory, and the logistics network. For instance, Walmart had to change its sourcing processes in order to deliver environmentally friendly products such as: organic cotton garment, vegetable and fruits. These changes entailed the identification of upstream suppliers, collaborative relationship with them, and alliances with third party to certify organic practices (Plambeck, 2012). Consequently, we posit the following hypothesis:

*H1: Process innovativeness is positively related to environmental innovativeness.*

### **5.2.3.2. Firm's Deployment of Internal Resources for Environmental Innovativeness**

It is suggested that firms with internal R&D activities are more likely to be environmentally innovative because environmental technologies often entail higher levels of novelty, uncertainty, and variety than traditional technological innovations, and since firms with high internal R&D have higher absorptive capacity, they are more likely to be environmentally innovative (Cainelli et al., 2015; Cohen and Levinthal, 1990). In relation to this, scholars have used the resource based view to argue that these innovation resources enhance environmental innovation because they are valuable, rare, inimitable, and non-substitutable (Cainelli et al., 2015).

However, in the same way that the resource based view fails to explain the mechanisms through which resources create competitive advantage (Kraaijenbrink et al., 2010), the environmental innovation literature also lacks of explanations about how innovation resources create the capacity of the firm to develop environmental innovations. To cope with these critiques business strategy scholars have proposed the resource management framework, which explains how resources are bundled into capabilities, and how these capabilities can be leveraged to create competitive advantages (Sirmon et al., 2007). Similarly, we apply the resource management framework to explain how innovation resources are bundled into environmental innovativeness capabilities, and empirically test this framework.

The resource management framework explains how capabilities are formed. It states that resources within the resource's portfolio of the firm are bundled together to create capabilities, where each capability is a unique combination of resources, and this unique combination allow firms to undertake actions that create value for the firm (Sirmon et al., 2007). Sirmon et al. (2007) suggest three forms of bundling: stabilizing, enriching, and pioneering. Stabilizing refers to a processes applied by the firm to perform minor modifications to existing firm's capabilities. Enriching refers to the process of extending or elaborating on prior capabilities; by integrating new acquired resources into existing capabilities new capabilities can be created.

Finally, pioneering refers to the integration of new resources or the recombination in different ways of existing resources to develop new capabilities of the firm. Hitt et al. (1998) explain how SmithKline managers combined their drug research capability with the diagnostic technological capability to create a new capability in biomedical research. Yet in this research we only use the concept of enriching bundling to explain how environmental innovativeness is developed.

Additionally, previous literature has found that internal R&D enhances environmental innovation because firms with a structured organization working on innovation are more likely to have an internal base of knowledge and skills to develop environmental products, processes or business models (Cainelli et al., 2015). Consequently, we build upon the resource management framework and the findings in operations management literature to argue that environmental innovativeness is the result of a two-sequenced enriching bundlings: first, innovation resources are bundled into process innovativeness, second, process innovativeness is extended to develop environmental innovativeness. Therefore, we posit the following hypotheses:

*H2: Internal R&D resources are positively related to environmental innovation through process innovativeness.*

### **5.2.3.3. Firm's Deployment of External Resources for Environmental Innovativeness**

Environmental innovation's projects entails high uncertainty about its outcomes and the project's length. Furthermore, there are no industry standards about environmental technology (Rennings, 2000). Yet, previous research has found that external resources for innovation allow firms to cope with these uncertainty and technological challenges (Cainelli et al., 2015; Ghisetti et al., 2015; Horbach, 2008). The logic behind the relationship between external resources and environmental innovation is similar to open innovation ideas (Ghisetti et al., 2015). The open paradigm suggests that firms should open their innovation process in order to gather better ideas, knowledge through both acquisition from the market and strategic partnerships with stakeholders. In a similar line, the resource based view

suggests that resources can be acquired from the strategic factor markets and be deployed within firms existing processes in order to create competitive advantage (Barney, 1991). Following this logic, and previous findings in environmental innovation literature we argue that acquisition of external R&D resources can be bundled into process innovativeness which in turn enhance environmental innovativeness. Hence, we hypothesize the following:

*H3: Acquisition of external R&D resources is positively related to environmental innovativeness through process innovativeness*

Additionally, acquisition of machinery and patents are useful external resources to enhance firm-level environmental innovation. These resources are also called hybrid resources for innovation, because although they were externally developed, once acquired by the firm they are part of the firm's portfolio of resources (Cainelli et al., 2015). However, these resources become useful when they are deployed to improve processes, energy efficiency, and material reductions (Cainelli et al., 2015; Kesidou and Demirel, 2012). In this sense, the acquisition of machinery and software are resources that once integrated can facilitate the development of new production, distribution or product development processes. In a similar way, patents and licenses are codified knowledge that can facilitate the development of new processes, which in turn reduce enhance energy efficiency and material-usage reduction. Hence, we hypothesized the following:

*H4: The acquisition of machinery and software is positively related to environmental innovativeness through process innovativeness*

*H5: The acquisition of patents and licenses is positively related to environmental innovativeness through process innovativeness*

#### **5.2.3.4. Firm's Deployment of Resources Brought from Stakeholders' Relationships for Environmental Innovativeness**

Environmental innovations are usually more complex than other type of innovations, because they require knowledge that is scarce within the firm

or even within the industry, entail longer projects with uncertain outcomes, and radical or breakthrough changes (Rennings, 2000). For this reason, the cooperation for innovation with several stakeholders offers relevant sources of knowledge for developing environmental innovation. Suppliers, and scientific organizations have been suggested as critical partners to provide knowledge for environmental innovation. Suppliers' knowledge enhances firm's efficiency and complement the technological base of the firm. In this sense, exchange of information with suppliers allow the firm to improve the environmental performance of processes and develop friendly products with the environment (De Marchi, 2012). Furthermore, scientific organizations such as universities and public research institutions are relevant for environmental innovations because they possess highly specialized human capital, distant and different knowledge from industry, and the capability and time to developing costly technology with longer time-to-market (Agrawal, 2001; Baba et al., 2009). In this sense, they are suitable partners that bring new knowledge to develop innovations in technological fields where the speed of technological change and uncertainty are high (Belderbos et al., 2006).

Moreover, previous research has found that R&D cooperation enhance the development of technological capabilities of the firm (Becker and Dietz, 2004), such as: product and process innovation capabilities. In this regard, since suppliers have larger responsibilities in the design of the product and the production process of components of firm's final product, the knowledge brought through R&D cooperation can enhance firm's process innovativeness through a tighter coordination which allow the firm to have better information regarding the materials and tools of the components, and a deeper understanding of the extended production process in the supply chain (Geffen and Rothenberg, 2000). Furthermore, previous research also suggests a positive relationship between R&D cooperation with suppliers and environmental innovation of the firm (Geffen and Rothenberg, 2000; Ghisetti and Pontoni, 2015; Ghisetti et al., 2015). Consequently, we hypothesize the following:



*H5: The knowledge brought by suppliers is positively associated with environmental innovativeness through process innovativeness*

R&D cooperation with scientific organizations (e.g. universities and public research institutions) also can enhance firm's process innovativeness. Previous research has found that through R&D cooperation with universities firms can access knowledge that allow them to introduce more advanced products and process innovations, and to bring up new products and processes in new technological fields with high speed of technological change (Belderbos et al., 2006; Cohen et al., 2002; Tödtling et al., 2009). In other words, the knowledge brought by scientific organizations is bundled into the process innovation capability of the firm. Furthermore, as mentioned above previous research also suggests that knowledge brought by scientific organizations enhance firm's environmental innovation. Consequently, we propose that R&D cooperation with scientific organizations enhance environmental innovativeness through process innovativeness. Thus we hypothesize the following:

*H6: The knowledge brought by universities is positively associated with environmental innovativeness through process innovativeness.*

*H7: The knowledge brought by public research institutions is positively associated with environmental innovativeness through process innovativeness*

## **5.3. Methods**

### **5.3.1. Data Collection**

We used the data gathered in the 2008 Community Innovation Survey (CIS). This survey is carried out every two years by EU member states. The survey measures the innovation activities in enterprises, which includes various types of innovation; and the aspects for developing innovation (e.g., objectives of innovation, sources of information, public funding, and innovation expenditures) (Eurostat, 2015). The 2008 edition is the latest one to incorporate variables about environmental innovation. In addition, although the macroeconomic landscape and energy prices have changed since

then (European-Commission, 2015), we think the data set is still relevant because the lack of technological standards, and the high institutional pressures are current issues for the development of environmental innovations. The unit of analysis of the survey is the enterprise. The questionnaire of this survey is elaborated following the guidelines of the Oslo manual, which supports the harmonization of the questions across countries and the comparability between countries. The target population of CIS 2008 was all enterprises in NACE rev. 2 sections A to M. Regarding sample selection, in most countries a stratified random sampling was applied, where the variables used for the stratification were the economic activity of the enterprise, and the enterprise size (Eurostat, 2008).

For the present study, we use the sample of enterprises taken for Germany. We chose Germany because it is an industrialized economy with a long standing tradition of cooperation between firms and scientific organizations (Koschatzky and Stahlecker, 2010; Research-in-Germany, 2015). Consequently, it is a suitable empirical setting to test the effect of the cooperative arrangement between scientific organizations and firms on firms' environmental innovation. Additionally, the exclusion of other countries rule out country-level factors that might add unwanted variance, and allow us to concentrate on enterprise-level factors that influence environmental innovation.

The 2008 CIS survey for Germany has about 6087 enterprises. The sample, however, is highly skewed. There is a high proportion of enterprises with low or zero R&D expenditures and there are few firms with high R&D expenditures. On top of this, there are outlier enterprises in R&D expenditure. We decided to drop the top 1% observations of the distribution to avoid the leverage effects that outliers might have on the covariance matrix (Hair et al., 2009). Furthermore, there were enterprises that report no data on the indicators of environmental and process innovativeness. These enterprises were dropped, and our sample for the measurement model was of 5538 firms. Finally, there were additional enterprises that had no records on the other independent variables of the structural model, consequently, the sample size for testing our hypotheses was made up of 4346 enterprises (see Table 5.1).

**Table 5.1: Sample Distribution across Industry**

<b>Industry</b>	<b>Enterprises for measurement model</b>	<b>Enterprises for structural model</b>
Mining and quarrying	82	68
Manufacture of good products, beverages, and tobacco	277	212
Manufacture of textiles, apparel, leather and other products	150	119
Manufacture of wood, paper, printing and reproduction	302	243
Manufacture of coke, refined petroleum products, chemicals, basic pharmaceutical products, rubber and plastic, non-metallic mineral products	535	418
Manufacture of basic metals, and fabricated metal products	400	323
Manufacture of computer, electronics, optical products, electrical equip, machinery and equipment, motor vehicles, transport equip	1020	790
Manufacture of furniture, repair and installation of machinery	316	257
Electricity, gas, and steam supply	144	112
Water supply, waste management	279	231
Wholesale and retail trade	178	141
Land transport, transport via pipelines, water transport, air transport	220	170
Warehousing, support of transportation, postal and courier services	165	134
Publishing activities, motion picture, programing and broadcasting	137	110
Telecommunications, computer programming, information services	257	198
Financial and insurance activities	204	141
Legal and accounting services, management consultancy	138	118
Architectural and engineering activities, scientific research, advertising	412	329
Other professional, scientific, and technical activities	19	16
Administrative and support services	303	216
<b>Total of enterprises</b>	<b>5538</b>	<b>4346</b>

Source: Elaborated by the author.

### 5.3.2. Measurement

Environmental innovativeness is defined as the firm's capability to adopt products, processes, organizational procedures that reduce the negative impact of the firm on the environment. As mentioned in the literature review, most studies focus on environmental innovation, and they generally measure it through a binary variable (i.e. either the firm has introduced an environmental innovation or not) and through the count of patents of green production technologies in a given period (Berrone et al., 2013; Cuerva et al., 2014; Horbach et al., 2013; De Marchi, 2012). Additionally, scholars who have used CIS data sum up the indicators of environmental innovation and define cutoff points where firms over the threshold are eco-innovative and those below are not. This approach measures whether a firm has introduced environmental innovations, but it is not suitable to measure the capability of a firm to develop environmental innovations.

Previous studies conceptualizing innovativeness as a capability operationalize it as a latent variable that reflects innovations (Das and Joshi, 2007; Rubera and Kirca, 2012). This approach is congruent with the stated concept because innovativeness antecedes innovation (Garcia and Calantone, 2002). We follow this suggestion and operationalize environmental innovativeness as a latent variable, which is reflected in 9 binary indicators (i.e. yes or no questions) of the CIS questionnaire. These indicators refer to the introduction of products, processes, organizational or marketing innovations that have positive impact on the reduction of CO<sub>2</sub> emissions, water consumption, soil or noise pollution, and material and energy efficiency (see Table 5.2). We conduct a confirmatory factor analysis to test the operationalization of environmental innovativeness.

Process innovativeness refers to the capability of the firm to engage and support new ideas for developing new processes (Das and Joshi, 2007). Previous scholars have operationalized it as a latent variable that reflects indicators regarding the development of new methods for delivering products and services, allocation of R&D resources for developing processes and technologies, etc. In this same direction, the CIS survey gathers binary (i.e.

yes or no questions) about the introduction of process innovations. These indicators include the introduction of new or significantly improved methods of manufacturing, logistics and distribution, and supporting activities such as maintenance, purchasing, etc. We operationalize process innovativeness as a latent variable that reflect those indicators.

Regarding the innovation resources, we consider four types of innovation resources and the cooperative relationships of the firm with three stakeholders for innovation purposes. The innovation resources are: the expenditures on in-house R&D; purchase of external R&D; acquisition of machinery, equipment, and software; and the acquisition of patents, licenses, or other type of know-how. The stakeholders considered are: suppliers, universities, and public research institutions. These relationships were measured through binary variables, where the variable takes the value of 1 if the firm collaborated with the corresponding stakeholder during the established period, and 0 otherwise.

Additionally, previous studies on environmental innovation argue that managers allocate resources to environmental innovations to cope with pressure from policy makers, consumers, and industry codes. Consequently, we also include dummy variables to control for the perceived pressure that taxes, subsidies, consumers' requirements, and industry codes have on innovation activities of the enterprise.

**Table 5.2: Measurement Model**

<b>Process innovativeness</b>		<b>CR: 0,789   AVE: 0,556</b>		
		<b>Loading</b>	<b>S.E.</b>	<b>R2</b>
u1-New or significantly improved methods of manufacturing or producing goods or services		0.693	0.022	0.481
u2- New or significantly improved logistics, delivery, or distribution methods		0.832	0.021	0.693
u3-New or significantly improved supporting activities for your processes (e.g. maintenance, systems or operations for purchasing)		0.704	0.022	0.496
<b>Environmental innovativeness</b>		<b>CR: 0,960   AVE: 0,727</b>		
<i>The enterprise introduced a product, process, organizational or marketing innovation that...</i>				
		<b>Loading</b>	<b>S.E.</b>	<b>R2</b>
u7-Reduced material use per unit of output		0.840	0.010	0.706
u8-Reduced energy use per unit of output		0.920	0.006	0.847
u9-Reduced footprint by your enterprise		0.884	0.008	0.781
u10-Reduced materials with less polluting or hazardous substitutes		0.782	0.012	0.612
u11-Reduced soil, water, noise, or air pollution		0.902	0.007	0.814
u12- Recycled waste, water, or materials		0.835	0.009	0.697
u13-Reduced energy use		0.832	0.010	0.692
u14-Reduced air, water, soil or noise pollution		0.857	0.010	0.735
u15-Improved recycling of product after use		0.813	0.011	0.660
<b>Overall measures of fitness</b>		Pearson Chi= 29417 (p<1)   Log Likelihood Chi= 9057 (p<1)		

Source: Elaborated by the author.

### 5.3.3. Measurement Assessment

To test our measurement model for the latent variables of environmental and process innovativeness, we ran a confirmatory factor analysis. We estimated the factor analysis through the maximum likelihood robust procedure (MLR estimator in MPLUS 6) because it corrects the standard errors, making them robust to lack of multivariate normal distribution and missing values, which is the case of our data set (Enders,

2010; Muthén and Muthén, 2010; Schafer and Graham, 2002). We have no evidence that reveals a poor fit of the measurement model with the data. Both Pearson chi square ( $\chi^2_{32539} = 29417 p < 1$ ) and likelihood ratio chi square tests ( $\chi^2_{32539} = 9057 p < 1$ ) do not reject the null hypothesis that the observed and predicted covariance matrices match. This indicates that the measurement model fits well the data (see Table 5.2).

Regarding the construct validity of the measures, Table 5.2 illustrates the squared loadings of the items are higher than 0.5, which indicates that both process and environmental innovativeness explain more than 50% of the item variance. To assess the convergent validity of the constructs, we checked the average variance extracted (AVE) of each construct. Table 5.2 illustrates that 56% of the variance of the indicators is explained by the process innovativeness construct, whereas 73% is explained in average by the environmental innovation construct. This indicates that our constructs are valid. Regarding discriminant validity, we estimated a restricted measurement model where the correlation between the constructs of process and environmental innovativeness was fixed to 1. Then, we performed a log likelihood chi square difference test, and the results indicate that these models are different ( $\chi^2_1 = 479.67 p < 0.00$ ). Therefore, the constructs of process and environmental innovativeness are discriminately valid. Finally, we compute the composite reliability coefficient for each construct to assess the reliability (see Table 5.2). We conclude that both process and environmental innovativeness constructs have high internal consistency.

#### **5.3.4. Common Method Bias**

When both the independent and the dependent variables are measured with a single-informant survey, they share the variance of the method. This can be a problem for the estimation of the model because the common variance makes the explanatory variables endogenous (Antonakis et al., 2010). The method variance could be seen as a third variable that correlates with both the independent and the dependent variable. Consequently, if it is not controlled, there is a confounding effect between the independent and the dependent variable. Previous research suggests that common method bias is

only solved through research design, the use of multiple respondents, the incorporation of instrumental variables in the questionnaire, and the incorporation of explicit indicators that measure the pattern of response of the respondent (Antonakis et al., 2010; Podsakoff et al., 2012).

We deal with common method bias through two mechanisms: temporal distance between dependent and independent variable in the questionnaire, and Harman's single factor approach. Previous research suggests that proximal separation in the questionnaire between the independent and the dependent variable attenuates common method bias (Podsakoff et al., 2012; Weijters et al., 2009). In this sense, the indicators of process innovativeness are in the section 3 of the questionnaire, and the indicators of environmental innovativeness are in section 10, being more than 30 items between the indicators of these two constructs. Moreover, the Harman's single factor approach is a mechanism for diagnosing the problem of common method bias (Podsakoff et al., 2003). We applied it to our data set. All variables loaded into two factors, where the first factor explained 25% of the total variance of the data. However, although the common method bias is mitigated in our estimation, we cannot statistically test for the method effect on the specified model. Consequently, common method bias might still be an issue in our model, so the reader should be cautious about it.

### **5.3.5. Data Analysis**

We estimate the mediation model through bootstrapping, which is an explicit procedure to test mediation. The procedure is as follows: first, 1000 samples with replacement are randomly taken from the original sample, and for each sample the specific direct and indirect effects are computed (see equations below). Second, the estimates of the direct and indirect effects are used to generate an empirical sampling distribution. Third, the significance of the effects is assessed through confidences intervals (Rungtusanatham et al., 2014). The bootstrapping procedure corrects the non-normality of the indirect effects. In this sense, it is one of the procedures with the greatest statistical power to detect mediation effects with acceptable type 1 error (Rungtusanatham et al., 2014). The estimated equations are the following:



$$Eninn = i + c_1Enreg + c_2Enregf + c_3Engra + c_4Endem + c_5Enagr + c_6lnINR\&D + c_7lnExR\&D + c_8lnAcMach + c_9lnAcExKnow + c_{10}Un + c_{11}PubRes + c_{12}Supp + e_1 \quad [1]$$

$$Pinn = i + a_1lnINR\&D + a_2lnExR\&D + a_3lnAcMach + a_4lnAcExKnow + a_5Un + a_6PubRes + a_7Supp + e_2 \quad [2]$$

$$Eninn = i + b_1Pinn + c'_1Enreg + c'_2Enregf + c'_3Engra + c'_4Endem + c'_5Enagr + c'_6lnINR\&D + c'_7lnExR\&D + c'_8lnAcMach + c'_9lnAcExKnow + c'_{10}Un + c'_{11}PubRes + c'_{12}Supp + e_3 \quad [3]$$

$$\theta_{xi} = a_i * b_1 \text{ Indirect effect [4]}$$

$$c_i = \theta_{xi} + c'_i \text{ Total Effect [5]}$$

The name of the variables and its abbreviations are explained in Table 5.3, see below:

**Table 5.3: Name of the Variables and its Abbreviations**

<b>Name of variable</b>	<b>Description</b>	<b>Abbreviation</b>
Environmental innovativeness	Factor score obtained in the CFA, explained in Table 5.2	Eninn
Process innovativeness	Factor score obtained in the CFA, explained in Table 5.2	Pinn
Existing environmental regulation	Dummy variable that indicates whether the enterprise has introduced an environmental innovation in response to existing environmental regulations or taxes on pollution.	Enreg
Environmental regulation or taxes expected in the future	Dummy variable that indicates whether the enterprise has introduced an environmental innovation in response to the expectation of future environmental regulations or taxes on pollution.	Enregf
Financial incentives for environmental innovation	Dummy variable that indicates whether the enterprise has introduced an environmental innovation in response to the availability of government grants, subsidies or other financial incentives for environmental innovation.	Engra
Customer's demands for environmental innovations	Dummy variable that indicates whether the enterprise has introduced an environmental innovation in response to current or expected demand from customers.	Endem
Voluntary industry codes for environmental good practice	Dummy variable that indicates whether the enterprise has introduced an environmental innovation in response to voluntary codes or agreements for environmental good practice within the industry.	Enagr
Natural Logarithm of Internal R&D	Natural logarithm of the expenditures on creative work undertaken within the enterprise to increase the stock of knowledge to develop new and improved products and processes.	InINR&D
Natural Logarithm of External R&D	Natural logarithm of the expenditures on purchases of R&D activities performed by other enterprises, public or private research organizations.	InExR&D
Natural Logarithm of Acquisition of Machinery, Equipment, and Software	Natural logarithm of the expenditures on acquisition of advanced machinery, equipment, and computer hardware or software to produce new or significantly improved products or processes.	InAcMach
Natural Logarithm of acquisition of external knowledge	Natural logarithm of the purchases of licensing of patents, and non-patented inventions, know-how, and other types of knowledge from other enterprises or organizations for the development of new or significantly improved products or processes.	LnAcExKnow
Cooperation with Suppliers for Innovation	Dummy variable that indicates whether the enterprise has had an active participation with suppliers of equipment, materials, components, or software on innovation activities.	Supp
Cooperation with Universities for Innovation	Dummy variable that indicates whether the enterprise has had an active participation with Universities or other higher education institutions on innovation activities.	Un
Cooperation with Public Research institutions for Innovation	Dummy variable that indicates whether the enterprise has had an active participation with the government or public research institutes on innovation activities.	PubRes

Source: Elaborated by the author.

One of the main assumptions for mediation analysis is the absence of endogeneity between the mediating variable and the dependent variable. To rule out endogeneity, we run a two-stage regression with instrumental variables and test the endogeneity with the Hausman test (Cameron and Trivedi, 2005). However, there weren't any exogenous variables in our data set that could be considered an appropriate instrument (i.e. an exogenous variable that is independent of both the other independent variables and the disturbances in the system of equations). Nevertheless, we used the instrumental variables approach with two exogenous dummy variables: whether the enterprise has received financial support for innovation from the European Union (e.g. tax credits, grants, subsidized loans, etc.), and whether the enterprise belongs to a Multinational. Hora and Dutta (2013) followed a similar procedure to rule out endogeneity without appropriate instruments in their data set. The result of the Hausman test indicates that process innovativeness and environmental innovativeness are not endogenous.

## **5.4. Results**

The enterprises in the valid sample for the structural model have high dispersion regarding their scores of environmental and process innovativeness. Yet, the dispersion of the expenditures on innovation resources is even higher. Regarding the proportion of enterprises that cooperate with stakeholders for innovation purposes: 7.6% of the enterprises cooperate with suppliers, 13.8% of enterprises cooperate with universities, and 6.2% cooperate with public research institutions. Additionally, the matrix of correlations displays the linear relationship between the variables in the model. This suggests that all the variables are positively associated between them. In this sense, it is noteworthy the high and positive correlation between process innovativeness and environmental innovativeness (see Table 5.4).

**Table 5.4: Descriptive Statistics and Correlations**

N= 4346	Mean	SD	1	2	3	4	5	6	7	8	9
1 Environmental innovativeness	-0.036	2.493	1.000								
2 Process innovativeness	-0.011	1.283	0.702	1.000							
3 (LN) In-house R&D	0.093	9.337	0.317	0.402	1.000						
4 (LN)External R&D (LN) Acquisition of machinery, software, etc.	-5.307	8.166	0.275	0.337	0.568	1.000					
5 (LN) Acquisition of external knowledge	0.903	9.210	0.394	0.536	0.495	0.402	1.000				
6 Coop suppliers	-5.938	7.387	0.246	0.328	0.292	0.381	0.424	1.000			
7 Coop universities	0.076	0.265	0.193	0.241	0.328	0.342	0.253	0.209	1.000		
8 Coop Public research institutions	0.138	0.345	0.208	0.255	0.498	0.485	0.276	0.222	0.422	1.000	
9	0.062	0.241	0.190	0.201	0.341	0.373	0.225	0.199	0.320	0.553	1.000

Source: Elaborated by the author.

The results suggest the presence of a direct effect of process innovativeness on environmental innovativeness. Regarding, the bundling of innovation resources into process innovativeness, the results suggest that internal R&D; external R&D; acquisition of machinery and software; acquisition of external knowledge; and the cooperation with suppliers for innovation are combined to form process innovativeness. From these resources, the cooperation with suppliers is the one with higher impact on the bundling of process innovativeness. On the other hand, our results suggest that the cooperation with universities, and public research institutions are not bundled into process innovativeness. This suggests that the knowledge brought from these organizations is not applied in the development of firms' capability to innovate processes.

Regarding the resources that are bundled into environmental innovativeness, the results suggest that cooperation with public research institutions for innovation has a positive effect on environmental

innovativeness, whereas internal R&D, external R&D, acquisition of machinery, cooperation with suppliers, and cooperation with universities do not bundle directly to develop environmental innovativeness. These latter resources bundle directly into process innovativeness, which is later recombined to create environmental innovativeness. In other words, environmental innovativeness is developed through the bundling of process innovativeness, and cooperation with public research institutions. Consequently, process innovativeness fully mediates internal R&D (H2 supported), external R&D (H3 supported), acquisition of machinery (H4 supported), acquisition of patents and licenses (H5 supported), and cooperation with suppliers (H6 supported) (see Table 5.5).

**Table 5.5: Results of the Mediation Model**

<b>Environmental innovativeness</b>	<b>Estimation</b>	<b>S.E.</b>	<b>Lower 2.5%</b>	<b>Upper 2.5%</b>	<b>Hypotheses outcome</b>
<b>Process innovativeness</b>					
	1.138***	0.027	1.084	1.191	Hypothesis 1 supported
Enreg	0.401***	0.081	0.242	0.561	
Enregf	0.642***	0.088	0.471	0.814	
Engra	0.009	0.113	-0.212	0.230	
Endem	0.820***	0.086	0.668	0.973	
Enagr	0.742***	0.076	0.595	0.892	
<b>Internal R&amp;D</b>					
Total effect	0.023***	0.004	0.014	0.031	Hypothesis 2 supported
Specific indirect	0.020***	0.003	0.014	0.026	
Direct effect	0.003	0.004	-0.005	0.010	
<b>External R&amp;D</b>					
Total effect	0.010**	0.005	0.000	0.020	Hypothesis 3 supported
Specific indirect	0.007**	0.004	0.001	0.014	
Direct effect	0.003	0.004	-0.006	0.011	
<b>Acquisition of machinery, software, etc.</b>					
Total effect	0.064***	0.004	0.056	0.072	Hypothesis 4 supported
Specific indirect	0.063***	0.003	0.057	0.069	
Direct effect	0.001	0.004	-0.007	0.008	
<b>Acquisition of external knowledge (e.g. patents and licenses)</b>					
Total effect	0.011**	0.005	0.001	0.020	Hypotheses 5 supported
Specific indirect	0.018***	0.003	0.011	0.024	
Direct effect	-0.007*	0.004	-0.015	0.001	
<b>Coop suppliers</b>					
Total effect	0.147	0.129	-0.106	0.400	Hypothesis 6 supported
Specific indirect	0.316***	0.089	0.141	0.491	
Direct effect	-0.169	0.111	-0.386	0.047	
<b>Coop Universities</b>					
Total effect	-0.108	0.121	-0.345	0.128	Hypothesis 7 rejected
Specific indirect	0.049	0.087	-0.121	0.219	
Direct effect	-0.157	0.102	-0.358	0.043	
<b>Coop public Research Institutions</b>					
Total effect	0.383**	0.152	0.086	0.681	Hypothesis 8 rejected
Specific indirect	0.061	0.101	-0.138	0.259	
Direct effect	0.323***	0.124	0.080	0.566	

\*\*\*p&lt;0.01 | \*\*p&lt;0.05 | \*p&lt;0.10

Source: Elaborated by the author.

Additionally, there are two results that deserve special attention: 1) the non-significance of cooperation with universities, and 2) the negative direct effect of acquisition of external knowledge on environmental innovativeness at 10% of significance. Although prior research has found positive relationship between cooperation with universities and environmental innovation, our results indicate that firm's cooperation with universities is not bundled into either process innovativeness or environmental innovativeness. In this sense, we reject hypothesis 7. We think the insignificance of cooperation with universities is related to the way it is measured, and with the cross-sectional nature of the study, issue that is further discussed in the next section. Furthermore, the acquisition of patents or licenses has both a positive indirect effect on environmental innovativeness through process innovativeness, and a negative direct effect, with 90% of confidence, on environmental innovativeness. In the aggregate, the total effect of this resource on environmental innovativeness is positive. Yet, considering the usual 95% of confidence we find empirical support for hypothesis 5. Nevertheless, the tension between the direct effect and the indirect effect of acquisition of patents and licenses will be further discussed in the conclusions of the paper.

Regarding the control variables, our results suggest that both perceived environmental regulation in the present, and expected environmental regulation in the future have a positive effect on environmental innovativeness. In addition, perceived customers' expectations of environmental innovations and voluntary codes for environmental practices in the industry also positively affect environmental innovativeness. Contrarily, there is no evidence that perceived government's incentives for environmental innovation affect environmental innovativeness. Consequently, it seems that environmental innovativeness is fostered in contexts with higher emphasis on "sticks" rather than on "carrots".

## 5.5. Discussion

This paper provides evidence that process innovativeness is a mediating capability for the development of environmental innovativeness. In this sense, innovation resources such as internal R&D, external R&D, acquisition of machinery; and stakeholder relationships for innovation purposes such as the cooperation with suppliers are bundled into process innovativeness which in turn foster environmental innovativeness. Additionally, there are stakeholder relationships such as cooperation with public research institutions that bundle directly into environmental innovativeness. Therefore, environmental innovativeness is developed through the bundling of process innovativeness and the resources brought from R&D cooperation with public research institutions. In this sense, this paper contributes to the literature of environmental innovation by adding precision of how innovation resources are bundled in order to foster environmental innovativeness. Furthermore, this research bridges the literature of operations management about continuous improvement practices and the one about environmental innovations by explaining how process innovativeness is a mediating capability between innovation resources and environmental innovativeness. Finally, this research addresses the limitations of the resource based view and present empirical evidence that its underlying logic is still valid for explaining the phenomenon of environmental innovation.

Critiques to the resource based theory suggest that resources per se are not the source of competitive advantage, but the managerial capabilities and bundling of resources (Kraaijenbrink et al., 2010). Previous research in environmental innovation and operations management suggest that the possession of environmental technologies, and R&D resources enhance the development of environmental innovations which in turn explains environmental performance and operational performance (Cainelli et al., 2015; Cuerva et al., 2014; Klassen and Whybark, 1999). Yet these studies have not considered how those resources should be managed or bundled in order to deliver environmental performance. In this sense, our study gives a step forward because it specifies the process through which innovation resources, and cooperation with stakeholders are bundled in order to form the



capability of the firm to environmentally innovate. Therefore, our research opens the black box of the underlying mechanisms through which innovation resources create environmental innovativeness.

The natural resource based view offers a mechanism to link environmental actions to profits. Previous research within this paradigm has found that pollution prevention practices positively affects the financial performance of the firm. However, more work is needed to understand the link between resources and capabilities (Hart and Dowell, 2011). In this sense, we also contribute to this line of research; we offer empirical support to the resource management framework applied in the context of environmental innovativeness. Our results suggest how innovation resources have to be bundled in order to shape the environmental innovativeness of the firm. Nevertheless, Hart and Dowell (2011) also argue that pollution prevention practices should be combined with innovation capabilities so the firm can capture value. This is a pending task in our paper that future research should address.

Regarding hybrid resources for innovation, there is a tension between the direct effect and the indirect effect of acquisition of external knowledge through patents or licenses. On one hand the acquisition of external knowledge has a positive indirect effect, through process innovativeness, on environmental innovativeness. On the other hand, the acquisition of external knowledge has a negative direct effect on environmental innovativeness. Yet the overall effect is positive and significant at 95% of confidence. This result suggests that the acquisition of patents or licenses should be aligned with the development of process innovations. In this sense, patents or licenses that don't target process innovativeness might be detrimental to environmental innovativeness of the firm. To make sense of the negative sign of the direct effect, we speculate that codified knowledge into patents or licenses might be too generic to enhance the capability of creating or adopting environmental innovations, and in this sense it is detrimental for environmental innovativeness. Hence, the acquisition of patents and licenses is meaningful for environmental innovativeness only when they are bundled into process innovativeness.

Previous research has found that R&D cooperation with universities enhance environmental innovation. However, when it is about environmental innovativeness we found that R&D cooperation with universities is insignificant. We think that the lack of significance of R&D cooperation with universities is due to the way this variable was operationalized. Previous research suggests that there are several channels of interaction between universities and firms. For instance, firms and universities can undertake joint research projects, consulting, contract research transactions, set human resource transfer programs between organizations, etc. (Perkmann and Walsh, 2007). Consequently, the breadth and depth of R&D cooperation with universities should be taken into account to understand the relationship between R&D cooperation with universities and environmental innovativeness.

Previous research suggests that environmental innovations (e.g. waste prevention) are important for the firm because it increases process innovation which in turn enhance the financial performance of the firm (King and Lenox, 2002). However, our research suggests that firms are able to undertake environmental innovations because they are process innovative. Hence, process innovations are not the result of environmental innovations, these environmental innovations come out because firms were process innovative in the first place. Therefore, the link between environmental innovations and financial performance has to be studied under the light of process innovativeness.

Additionally, process innovativeness might entail the development of incremental and radical innovations. In this sense, process management techniques are associated with incremental innovations and at the same time are decoupled from radical innovations (Benner and Tushman, 2002). The CIS survey questions refer to both incremental and radical innovations. Hence, we are measuring the capabilities to innovate both incremental and radical innovations. Previous research suggests that incremental process innovation should be decoupled from exploratory innovation activities that could foster radical innovations (Benner and Tushman, 2003). Our results also points in this direction, cooperation with public research institutions, a

kind of exploratory innovation activities (Agrawal, 2001), does not bundle into process innovativeness, they have a direct impact on the development of environmental innovativeness. In this sense, exploitative innovation activities, the bundling of process innovativeness into environmental innovativeness, are combined with exploratory innovation activities in order to foster environmental innovativeness.

## **5.6. Conclusions**

Climate change concerns demand managers to adopt environmental technologies to reduce their emissions of anthropogenic gases. In this sense, firm-level environmental innovation is a matter of public interest, where managers will face more pressure in the future. In this line, our research suggests a path that managers could follow in order to build the capability to develop environmental innovation. Our research informs managers that innovation resources build process innovativeness which in addition to R&D cooperation with public research institutions develop environmental innovativeness. Hence, managers should allocate their efforts into bundling resources to support process innovativeness. Consequently, managers who aim to develop capabilities for environmental innovations should understand that this is a process entailing developing first process innovativeness, supporting it with innovation resources and cooperation with suppliers, and finally enriching it with cooperation with public research institutions.

There are untied things of our research that serve as a basis for future research. We classify these aspects into the following categories: managerial capabilities for bundling resources; implications for process improvement literature; value creation of environmental innovativeness; and methodological aspects. Therefore, we end this paper with implications of our research about these topics, and suggest what other scholars can do in order to move the field forward in these topics.

Our research tells managers what they should do with resources in order to develop environmental innovativeness. Yet, it says nothing about the required managerial capabilities, organizational structures, or coordination

mechanisms to bundle such resources. At this point we know what resources have to be bundled, but it is unknown how the bundling process is organized. In this same line, this study has only focused on the linear relationships between resources, process innovativeness and environmental innovativeness. There might be complementarities and substitution between the identified resources in the process of environmental innovativeness. Hence, future research should consider the groups dynamics, inter-departmental cooperation, the organizing process underlying the bundling of innovation resources and stakeholder relationships, and the complementarities between innovation resources, process innovativeness and environmental innovativeness.

Our results suggest that process innovativeness has a direct impact on environmental innovativeness. This result builds upon the findings in the green and lean literature (King and Lenox, 2001a; Rothenberg et al., 2001). This literature suggests that firms who possess lean or TQM practices are more likely to implement environmental technologies. In this same line, scholars in environmental innovation have suggested that quality management systems facilitate the emergence of environmental innovation (Cuerva et al., 2014). Yet, our research found that process innovativeness, a plausible antecedent of process improvement programs, has a direct impact on the ability of the firm to environmentally innovate. Hence, it is unknown whether there is a net direct effect of these programs after process innovativeness is included. Consequently, future research in lean and green literature should consider process innovativeness in their models.

Furthermore, our research ends with the development of environmental innovativeness. It is unknown how firms capture value with this capability. Hence, future research should study how environmental innovativeness is leveraged in order to enhance operational and financial performance of the firm. Additionally, there might be contingencies in the relationship between process innovativeness and environmental innovativeness. For instance, process innovativeness might have a stronger effect on more stable, and munificent industries. These ideas should be tested in future research.

Finally, there are some methodological concerns that should also be improved in future research. Ghisetti and Pontoni (2015) found that cross-section studies based on primary data are less likely to find support for hypotheses relating innovation resources and environmental innovation. This might be one of the reasons for the lack of significance of cooperation with universities. In this same line, future research should also specify the depth and breadth of cooperation with several stakeholders for innovation purposes in order to better understand how knowledge brought by stakeholders is bundled into both process and environmental innovativeness. Lastly, common method bias is still an issue in our research. Future innovation surveys should consider including items that measure the pattern of response of the respondents, which will allow mitigating the common variance. The use of instrumental variables is another option, in this sense, it would be fruitful the identification of instruments that could remove the common method variance in future innovation studies.



## **Chapter 6. Conclusions**

This chapter synthesizes the main findings of the thesis, remarks the main contribution to the literature of SSCM, summarizes the managerial contributions, and ends with potential lines of future research.

## **6.1. Summary of Main Findings: Answers to Thesis' Research Questions**

The thesis has focused on the study of cooperative relationships between firms and secondary stakeholders for the creation of value in SSCM. In this sense, it focused on three issues, which are cross-sectional to the topic of cooperative relationships with secondary stakeholders: 1) the inter-organizational fit between firms and NGOs prior to value creation processes; 2) the resources that NGOs have to develop and have to seek in order to create supplier development programs that alleviate poverty; 3) the process of bundling between innovation resources and knowledge brought from stakeholders into process innovativeness, which later is further bundled into environmental innovativeness. Below, there is a synthesis of the research questions of the thesis with its respective answers.

- I. *How do firms and NGOs achieve inter-organizational fit to undertake cooperative initiatives that create value in socially sustainable supply chains?*

The process of inter-organizational fit starts with the NGO's value logic adjustment. The NGO considered the private sector as a relevant source of value creation. This value logic adjustment drives the alignment of the NGO's mission with the profit-oriented behavior of firms. This situation was enabled by the structural social capital of the NGO and the boundary spanning capabilities of the NGO's representatives. Furthermore, the alignment of NGO's and firm's strategies was driven by the NGO's mission alignment. The harmonization between poverty alleviation and profit-oriented behavior drives the firm to fit its sourcing strategy with the objectives of the NGO. After that, inter-organizational fit was enabled by the job specialization of the purchasing function and the presence of supporting collaborative relationships routines (see Figure 3.1).



*II. What resources do NGOs use when they undertake supply-management practices for poverty alleviation?*

The NGO-resources were critical for designing and setting up the SD program to meet the needs of the supply market reality. The buying firm resources were critical to carry out the transaction and protect the value created in the buyer-supplier relationship. The resources provided by each organization are inter-temporal complements and both alleviate poverty through supply management initiatives (see Figure 4.2). The proposed framework suggests that the NGO-resources of knowledge for localizing SD programs and bridging capability are critical for designing and setting up the SD program.

*III. What firm resources do NGOs seek when they undertake supply-management practices for poverty alleviation?*

The resources sought by the NGO are relevant to carry out the transaction with poor suppliers, and to protect the created value in the buyer-supplier relationships. These resources were: the buying firm's knowledge transfer routines, logistical resources, and relational contracting based on procedural fairness.

*IV. Does process innovativeness mediate the relationship between R&D resources, stakeholder relationships, and environmental innovativeness?*

There is evidence that process innovativeness is a mediating capability for the development of environmental innovativeness. In this sense, innovation resources such as internal R&D, external R&D, acquisition of machinery, software, patents, and knowledge brought by R&D cooperation with suppliers are bundled into process innovativeness in order to foster environmental innovativeness. Additionally, the knowledge brought by R&D cooperation with public research institutions bundles directly into environmental innovativeness. Therefore, environmental innovativeness is developed through the extension of process innovativeness and its bundling with knowledge brought from R&D cooperation with public research institutions.

## **6.2. Discussion of Main Findings of the Thesis**

The overall discussion of the thesis is structured on the common themes addressed in the three papers: cooperative relationships between firms and their secondary stakeholders, and value creation in a SSCM-context with no foreseen synergies. Additionally, we also discuss how the findings of this research contributes to the resource-based view and how this theory complements the stakeholder theory in the context of SSCM.

### **6.2.1. Cooperative Relationships between Firms and their Secondary Stakeholders**

The current paradigm in inter-organizational relationships between firms and their secondary stakeholders is one where firms implement socially sustainable practices to comply with stakeholder requirements (Parmigiani et al., 2011; Shafiq et al., 2014). In this regard, the field of socially SSCM has not caught up with the advance of stakeholder theory and industry best practices that suggest that firms can undertake a collaborative approach with secondary stakeholders to create value (Alvarez et al., 2010; Freeman et al., 2010). To this extent, this thesis has provided two theoretical frameworks that explain how firms align with NGOs, and how NGOs lead supply management practices in cooperation with firms to enhance the social sustainability of the supply chain. Hence, our findings go in line with previous findings of business & society literature, which have suggested that prior to resource combination, firms and NGOs have to match their organizational values, structures, and routines (Arenas et al., 2013; Austin and Seitanidi, 2012; Selsky and Parker, 2005).

Furthermore, the thesis also provides a framework that explains how NGOs contribute to the creation of innovative, socially sustainable supply chains using traditional supply management practices. Previous literature has either suggested that firms must develop relational capabilities to manage stakeholder pressures (Klassen and Vereecke, 2012; Matos and Silvestre, 2013) or that collaboration with non-traditional members such as NGOs might be a key component of sustainable supply chains (Pagell and Wu, 2009). However, the literature has not contemplated the possibility that non-

traditional chain members could be actively engaged in sustainable supply chain projects themselves. This research contributes by identifying and conceptualizing the resources that allow NGOs to design and set up supplier development programs that alleviate poverty.

### **6.2.2. Value creation in SSCM-contexts with no Foreseen Synergies between the Dimensions of the 3BL**

Overall, the thesis has studied cooperative initiatives between firms and their secondary stakeholders in two contexts: 1) with no initially foreseen synergy between social and economic performance, 2) the development of firm's environmental innovativeness. The results show that cooperative initiatives between firms and their secondary stakeholders, specifically NGOs and public research organizations, are a potential mechanism for creating value in SSCM. In this regard, secondary stakeholders are sources of resources to create value in contexts with no foreseen synergies between the dimensions of the 3BL. Consequently, managers and future research should pay closer attention to the extended supply chain and address how they can effectively leverage the resources owned by secondary stakeholders.

The thesis has answered the claim that more research is needed about innovative schemes, and creative combination of resources to create value in the supply chain (Klassen and Vereecke, 2012; Pagell and Shevchenko, 2014). The results suggest that a collaborative approach to secondary stakeholders can create opportunities for value creation in SSCM. Consequently, managers and scholars should start seeing secondary stakeholders as partners instead of instigators.

### **6.2.3. The Validity of Resource-based View for Addressing Stakeholders' Relationships in the Context of SSCM**

Previous research suggests that the SCM field would benefit from studies addressing how partnerships create extended value in the supply chain (Priem and Swink, 2012). Resource based theories are used in supply chain research to explain how firms leverage their internal and supply-chain resources to achieve competitive advantage (Barney, 2012; Hult et al., 2006;

Russell Crook and Esper, 2014). This thesis suggests that the logic of resource based theories also works in a broader sense of value creation, including how non-economic stakeholders identify, orchestrate, and allocate resources to achieve their organizational goals. Consequently, this research also contributes to the SCM literature by addressing how partnerships create extended value. This result also provides empirical evidence for the arguments elaborated by Freeman et al. (2010): the resource-based view and the stakeholder theory are complementary theories for explaining value creation.

Furthermore, it is argued that resources are not the source of competitive advantage, but the managerial capabilities and bundling of resources (Kraaijenbrink et al., 2010). To this extent, existing literature suggests that the possession of environmental technologies, and R&D resources enhance the development of environmental innovations, which in turn explains environmental performance and operational performance (Cainelli et al., 2015; Cuerva et al., 2014; Klassen and Whybark, 1999). Yet these studies have not considered how those resources should be managed or bundled in order to deliver environmental performance. In this sense, this thesis contributes by specifying the process through which innovation resources, and cooperation with stakeholders are bundled in order to form the capability of the firm to environmentally innovate. Therefore, our research opens the black box of innovation resources, and suggests that process innovativeness is the conduit for developing environmental innovation.

### **6.3. Managerial Implications**

Although the thesis finds evidence supporting the importance of collaboration with secondary stakeholders, they still exert pressure on firms for the implementation of sustainable practices. In this regard, there is a kind of duality on the relationships between firms and their secondary stakeholders. On one hand, firms have to comply with the requirements that secondary stakeholders expect from them; and on the other hand, managers should cooperate with them to complying with their requirements. In this line, the results inform managers on how to configure their organizational structure

and routines to engage in such cooperative initiatives. The results suggest that managers should design specialized organizational units, and leverage routines that support inter-organizational cooperation. Furthermore, NGO's leaders should hire employees with high boundary spanning skills, and harmonize their value logic with the profit-oriented behavior of firms.

Regarding establishing partnerships with NGOs to undertake supply management programs in socially sustainable supply chains, the thesis makes the following managerial recommendations. First, engage with partners who can connect the firm with a pool of resources that by itself the firm cannot access. Second, firm's resources will need adaptation to the local context before undertaking any supply management initiative with poor suppliers. Third, the firm would need to invest in knowledge transfer routines and logistical resources to successfully integrate poor suppliers. Finally, managers should govern buyer-supplier relationships through relational mechanisms based on procedural fairness.

Finally, regarding the development of firm's environmental innovativeness, the thesis suggests a two-sequenced bundlings of resources. First, managers have to deploy their innovation resources into the development of process innovativeness. Then, process innovativeness is extended and bundled with knowledge brought in the form of R&D cooperation with public research institutions for developing environmental innovativeness.

## **6.4. Research Limitations**

The conclusions drawn from this thesis are bounded by the limitations of the methodology applied. A nested case study and a single-informant European survey run by the European Commission were used. The nested case study included a multinational NGO, six buying firms and suppliers operating in the same country. Hence, the two inductively developed frameworks have high internal validity, but a weak external validity. Therefore, future research should examine the framework in the light of contextual factors that might enhance our understanding about the

phenomena. Factors such as: multinational firms, country-level variables, etc. In this regard, future research should undertake field experiments, survey designs to measure the identified variables and assess the proposed relationships between NGO's resources, firm's resources and suppliers' poverty alleviation. A similar approach should be taken to assess the process of inter-organizational fit.

Regarding the limitations of the methodology used in the survey paper, common method bias is still an issue in our research. Even though we assessed that the common method variance is not severe (via Harman's single score), and we also mitigate the common method bias through the use of proximate distant indicators, the only mechanisms to test the effect of common method variance in the structural model are: a) multiple informants per unit of analysis; b) the incorporation of items in the survey that allow to capture the response patterns of the respondent; c) the inclusion of instrumental variables to remove the endogeneity between independent and dependent variables (Antonakis et al., 2010; Podsakoff et al., 2012). Consequently, future research should consider these suggestions during the research design.

Additionally, prior research suggests that cross-section data studies are less likely to detect effects in innovation-related variables (Ghisetti and Pontoni, 2015). Following this idea, future research should use panel data models to also incorporate the effect of time in the model. Similarly, there are industry-level, and country-level variables that might have an effect on the development of environmental innovativeness. Hence, future research should also identify multi-level models to address potential effects of industry dynamics and country-level variables.

## **6.5. Avenues of Future Research**

Overall, there are four themes that deserve further consideration in future SSCM research: a) value capture in SSCM practices; b) the role of managerial abilities, organizational-related and team-level factors in the development of environmental innovativeness; c) conceptualization of

NGO's bridging capabilities; and d) the application of other supply chain practices for poverty alleviation.

*Value capture in SSCM practices*

In both instances, the implementation of SD programs for poverty alleviation and the development of environmental innovation, there is no straightforward evidence about the mechanisms of value capture by the firm. There are some insights, for instance, about the fact firms increased the volume of purchased items, which in turn diminished their supply risk, and reduced their sourcing lead time. Yet these ideas need further validation. In this same line, in the investigation of environmental innovativeness the thesis did not test how firms capture value from the leveraging of its environmental innovativeness. Future research should study how environmental innovativeness is leveraged to enhance the operational and financial performance of the firm.

*The role of managerial abilities, organizational-related and team-level factors in the development of environmental innovativeness*

The thesis suggests managers how to deploy their innovation resources to develop environmental innovativeness. Yet, it says nothing about the required managerial capabilities, organizational structures, or coordination mechanisms to bundle such resources. At this point, we know what resources have to be bundled, but it is unknown how the bundling process is organized, coordinated and leveraged. Future research should look at the managing, coordinating, and organizing of resource-bundling. Perhaps future research should consider meso-level variables such as: team composition, incentives and governance structures within the organization that deploy the innovation resources. It can also be observed the use of IT or other technologies in the coordination of activities during the deployment of organizational resources.

*Conceptualization of NGO's bridging capabilities*

The idea that NGOs span holes in the supply networks of developing economies has been acknowledged in previous research of business & society, and social networks literature (Arenas et al., 2013; Brown, 1991; Hahn and Gold, 2014; Obstfeld, 2005; Westley and Vredenburg, 1991). They have conceptualized the phenomenon either as a type of organization or as the role adopted by an organization within a network. We conceptualize the phenomenon as a capability of the firm. Yet, the conceptualization of bridging as a capability needs more work. For instance, what are the antecedents? How does it evolve? And what are the potential outcomes of the leverage of this capability? Future research should address these questions.

*The application of other supply chain practices for poverty alleviation*

The application of SD programs for poverty alleviation opens the door to explore other supply chain practices that can be adapted for social issues. For instance, future research should analyze whether the use of mobile applications facilitate the integration of poor farmers into supply chains. In this same line, it would be interesting to explore the mechanisms for integrating information from such mobile applications into ERP systems, and whether that application enhances the coordination between buying firms and poor suppliers.



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## **Appendix**

### **Appendix 1: Case Study Protocol**

#### **Research purpose**

The aim of research of this project is to study the development of buyer-supplier relationships in contexts of poverty alleviation through partnerships between firms and NGOs. Specifically, the research questions we would answer are: how firms and NGOs cooperate to develop SD programs for poverty alleviation? What resources do enable the development of such cooperation and such programs?

#### **Conceptual framework**

- Relational view
- Social capital theory

#### **Themes to gather information about**

- Antecedents of the NGO
- Activities of the NGO prior the project
- Connections of the NGO and previous allies

#### **Complementary resources**

- The role of the NGO during the creation of value in the project
- Reasons for the firm to join the program
- Cultural, values, visions about the cooperation with the firm (and the NGO)
- Coordination and follow up of the project
- CSR (if any) policy of the firm
- Purchasing practices of the firm related to the category of products in question or similar suppliers

#### **Social capital**

- Trust and mutual understanding between the firm and NGO
- Communication channels between the firms and NGOs
- Connections developed along the initiative

#### **About the initiative**

- Challenges and barriers for implementation
- Total cost
- Total Material purchased
- Length of the initiative
- Transaction costs avoided
- Operational results of the suppliers