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## **Creating Sustainable Supply Chains: Influencing Sustainable Practices in the Supply Chain**

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Creating Sustainable Supply Chains: Influencing Sustainable Practices in the Supply Chain

A dissertation submitted in partial fulfillment  
of the requirements for the degree of  
Doctorate of Philosophy in Business Administration

by

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## **Abstract**

Organizations worldwide are reporting their commitment to create sustainable supply chains. Ultimately, supply chain professionals are the drivers of change within their respective organizations, so this dissertation examines the role of communication as a tool to persuade supply chain professionals to create sustainable supply chains. The three studies within this dissertation employ different methodologies to examine the role of communication in the development and implementation of sustainability initiatives. The first study, a grounded theory investigation, highlights the network, communication, and structural factors that provide a strong business case for the development of sustainability initiatives. A strong business case influences the supply chain professionals' intentions positively and thereby leads to the voluntary adoption of activities conducive to the creation of a sustainable supply chain. While the first study outlines the important factors for the creation of a sustainable supply chain, the latter studies provide evidence of the efficacy of communication in motivating employees and supply chain partners to develop and implement sustainability initiatives. The second study, a field experiment, draws on the social psychology literature to highlight the effectiveness of normative messages in motivating voluntary pro-environmental behavior of employees (VPBE). The experiment used a 6x1 experimental design, and featured 645 trucks in a medium-sized trucking firm whose drivers received weekly messages. Two of the five messages were effective in inducing pro-environmental behavior. The third study, a vignette-based experiment, is built on the tenets of goal framing and investigates the role of inter-organizational communication as a means of persuasion for supply chain managers to implement sustainability initiatives within their organization. The results reveal the efficacy of tailoring communication based on the supply chain manager's focus on sustainability. Together the three studies highlight the need to align

communications and job responsibilities, which provides managerial insights regarding effective inter- and intra-organizational communications in the creation of sustainable supply chains.

Thus, the dissertation contributes to the extant supply chain literature by highlighting the fact that communication as a tool is not limited to information exchange but can also be utilized for persuasion.

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## **Dedication**

This dissertation is for Ma, Baba, and Rony – When I thought I couldn't, you knew I would.

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## **I. Chapter 1**

### **A. Introduction**

The corporate sustainability reports of all major organizations worldwide outline an organizational commitment to achieving economic, social and environmental goals (Searcy & Buslovich, 2012). At a supply chain level, the success of such sustainability commitments requires different organizations to coordinate the implementation of sustainable supply chain management (SSCM) initiatives, while at an organizational level, each firm in the supply chain must strive to achieve these goals (Carter & Rogers, 2008; Linton et al., 2007; Seuring and Müller, 2008). This dissertation examines the role of the individuals, particularly supply chain management (SCM) professionals in the various organizations, in the creation of sustainable supply chains. The underlying assumption of the dissertation is that by influencing SCM professionals, organizations and therefore supply chains, become sustainable (Cantor et al., 2012; Daily & Huang, 2001; Pagell et al., 2013). Thus, SCM professionals' actions are the key to creating sustainable supply chains. In this dissertation, consistent with prior research, the SCM workforce includes the personnel within the operations and production management, logistics and transportation, and marketing departments (Mentzer et al., 2008).

In this investigation of the creation of sustainable supply chains, communication is studied as the persuasion tool for influencing SCM professional behavior. The three studies employ different methodological lenses, grounded theory, field experiments, and laboratory experiments, to examine the creation of sustainable supply chains by examining facets of communication to ensure inter- and intra- organizational persuasion of SCM employees to work on sustainability activities. The role of communication in the creation of sustainable supply chains has been overlooked in the literature. Communication is defined as, "... the ongoing,

dynamic, interactive process of manipulating symbols toward the creation, maintenance, destruction, and/or transformation of meanings, which are axial—not peripheral—to organizational existence and organizing phenomena (Ashcraft et al., 2009, p 22). SSCM practices are “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 & Rogers, 2008. p. 368). SCM professionals’ temperament towards sustainability affects their intention to adopt sustainability practices (Kirchoff et al., 2015; Signiori et al., 2015). Individuals may also be influenced to adopt sustainability initiatives by effective communication (De Groot et al., 2013; Goldstein et al., 2008). Thus, while some members in the supply chain may be positively predisposed towards sustainability, others may be nudged towards such activities by utilizing communication tools efficiently. This dissertation investigates the persuasion of SCM personnel to adopt non-mandated sustainable practices.

The three essays within the dissertation focus on gauging the SCM professionals’ intentions to work on voluntary SSCM projects using different theoretical lenses. The three studies in this dissertation seek to extend the literature by investigating the use of effective communication to disseminate sustainability voluntarily, both inter-organizationally as well as intra-organizationally.

The first chapter of the dissertation is a grounded theory study examining the sustainable supply chain contagion (SSCC) phenomenon. SSCC is the propagation of SSCM practices from the communicating organization to the focal organization, by convincing the focal firm's SCM professionals to work on the initiative. Successive adoption of non-mandated SSCM activities

would result in the creation of sustainable supply chains by the process of SSCC. It explores various aspects of communication that result in increased value proposition for the SCM professional. The study outlines network, communication, and structural factors influencing the SCM professionals in the focal organizations, especially when the business case for the initiatives is weak.

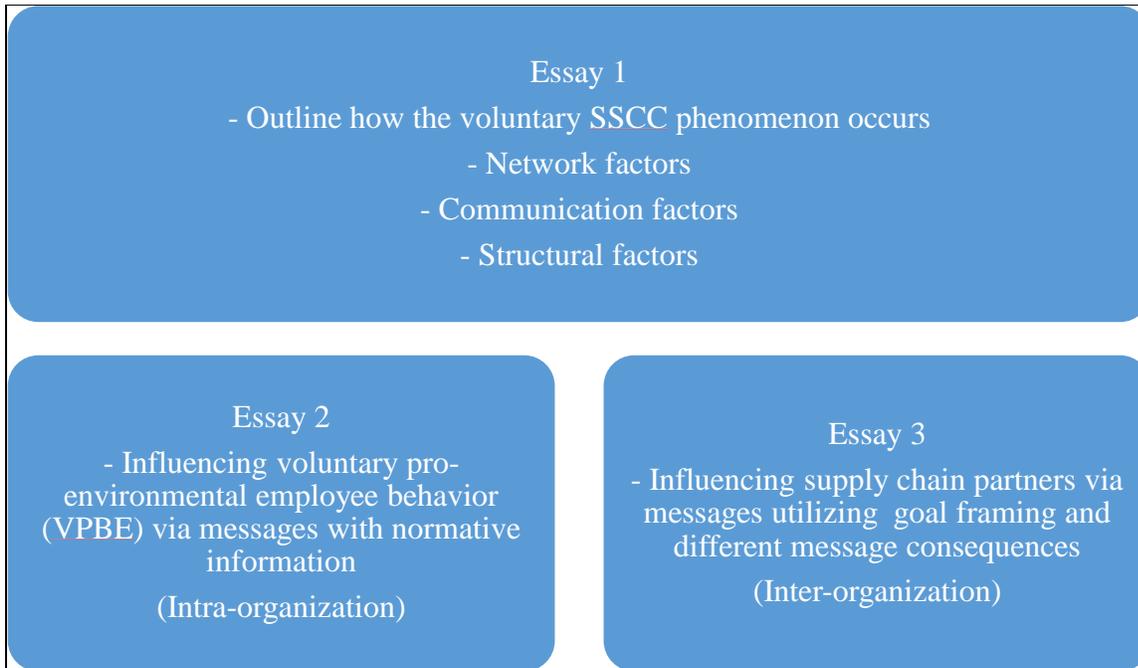
The second chapter outlines a field investigation on the efficacy of normative messages in reducing truck driver idling. The study therefore, highlights the role of communication in promoting inter-organizational environment management practice.

The third chapter presents the findings from vignette-based experiments to highlight the role of goal framing and message consequence in establishing SCM professionals' motivation when asked by a communicating organization, to discuss the possibility to adopt an SSCM practice in the organization. This is an important first step before the focal organization's SCM actors evaluate the benefits of adopting the initiative. Moreover, the study highlights the importance of aligning the message consequence with the departmental responsibility of the SCM actor.

Together, the broad research question addressed in this dissertation is, how can communications be leveraged to influence SCM professionals to voluntarily work on sustainability initiatives and thereby create sustainable supply chains? The dissertation aims to establish the attitude and behavior-changing capability of communication. While communication is mostly regarded as an information-sharing tool, it can change work related behavior (Cornelissen et al., 2015). This aspect of communication is overlooked in the supply chain literature. Figure 1 outlines the dissertation framework. The next section of the chapter outlines

the foundational literature review. Subsequently, the different studies in different chapters are outlined. Finally, the dissertation implications and dissertation outline are presented.

**Figure 1:** Dissertation framework



## **B. Foundational Literature Review**

At the organizational level, factors such as organizational commitment, power, and incentives have been found to influence organizations to adopt sustainability initiatives (Brockhaus et al., 2013; Proteous et al., 2015). Studies in the advancement of organizational environmental practices have shown that firms need to “sell” their idea to the individuals responsible for the practices or activities (Bansal, 2003). Incentives have been found to be more influential in motivating employees to work on environmental management practices, especially when the job is not directly related to sustainability (Russo & Harrison, 2005). These findings of the job responsibility suggest that SCM professionals who are not directly involved in organizational environmental pursuits, may need some motivation for adopting a sustainable outlook. In addition to persuasion by the buyer, an internal environmental champion within small

and medium-sized suppliers is a critical factor influencing suppliers to develop environmental capabilities (Lee & Klassen, 2008). While the studies hint at the need to encourage or motivate SCM professionals, they do not conduct the studies at an individual level.

On an individual level, studies have found a significant relation between employee perceptions of the organizational support for environmental behaviors and employee engagement in such activities (Cantor et al., 2012). In the same study, training, rewards, and support from supervisors were found to be significant predictors of the employee perceptions. Gattiker and Carter (2010) evaluated the role of a project champion to influence others within an organization. They found that the use of inspirational appeals, consultation, and persuasion were positively related to commitment towards a sustainability initiative. Also, ingratiation as a tactic did not assist in the adoption of sustainability practices. Video-based experiments have been utilized to examine how individual characteristics of self-transcendence and self-enhancement were positively related to the adoption of sustainability practices (Gattiker et al., 2014). This is because self-transcendence resulted in accepting everyone as equal, while self-enhancement resulted in looking for success as a means of security and esteem. The employee's image within the organization was found to be another factor affecting the sustainability commitment (Gattiker et al., 2014). Organizational influence theory and organizational support theory have been utilized as the theoretical lenses in understanding the behavior of SCM professionals (Cantor et al., 2012; Gattiker & Carter, 2010; Gattiker et al., 2014). The dissertation extends the work by investigating the role of effective communications in convincing SCM professional to adopt sustainability initiatives resulting in SSCC.

Adoption of the sustainable practices proposed by the downstream partner by successive supply chain echelons, will lead to sustainability contagion and thereby benefit the society and

the environment. Thus, sustainability contagion is contingent on the SCM professionals from different organizations acceding to participate in the sustainability initiative. The studies in the dissertation address a gap by examining communication factors at the individual level, that either facilitate or debilitate the contagion of supply chain sustainability.

### **C. Chapter 2 Summary**

The proliferation of sustainability activities within the supply chain requires SCM professionals from different supply chain echelons to “buy” into the downstream organization’s sustainability proposition. Downstream organizations influence the upstream members by utilizing power and collaboration tactics (Brockhaus et al., 2013). However, by using authority, mandated assimilation of the sustainability initiatives in the supply chains, often results in discontent among the upper tier supply chain members (Brockhaus et al., 2013). On the other hand, collaboration results in satisfaction and greater appreciation towards the sustainability initiatives within the entire workforce (Brockhaus et al., 2013). This study focuses on the communication factors from a focal organization, that influence SCM professionals to participate in sustainability efforts voluntarily, when asked by a member of a downstream communicating organization.

The lower tier members are often responsible for introducing sustainability activities within the supply chain (Ayuso et al., 2013; Andersen & Skjoett-Larsen, 2009). The study examines the upstream SSCC phenomenon. Subsequently, upper tier acceptance of sustainability activities results in SSCC encompassing the entire supply chain. The investigation includes the evaluation of the social and environmental dimensions of sustainability (Carter & Rogers 2008). The following overarching research question and sub-questions are the focus of the study:

Overarching research question: *How does voluntary SSCC occur?*

Sub-Question 1: *What is the role of professionals with job functions directly involved with sustainability initiatives?*

Sub-Question 2: *What is the role of communication in the persuasion of supply chain professionals to adopt sustainability initiatives within the organization?*

Sub-Question 3: *What are organizational and individual level factors, which influence SCM professionals to adopt non-mandated sustainability initiatives?*

The study utilizes the grounded theory building approach to build propositions regarding the manner in which sustainability contagion occurs (Glaser & Strauss 1967; Strauss & Corbin, 1990; Pratt 2009). Semi-structured interviews are conducted with 21 SCM professionals with a wide range of responsibilities from various organizations that vary in size and sustainability focus. Thus, while some of the interviewees work in organizations that are actively involved in sustainability and have dedicated sustainability teams, which results in a proactive decision-making stance; others work in organizations where sustainability engagement is reactive and often limited to the certification and process efficiency in order to maintain legitimacy in the industry. In keeping with the guidelines of Strauss and Corbin (1990), data is analyzed parallel to the data collection process.

The interviews led us to the network contagion model proposed by Burt (1987). According to network theory, each member of the network is known as a node (Borgatti & Foster, 2003; Borgatti & Li, 2009). Therefore, in the study, each node represents a professional involved in the sustainability communication. The focal node/s, or ego nodes, are the nodes representing the supplier's organization and are the targets to adopt sustainability initiatives

(Borgatti & Foster, 2003; Borgatti & Li, 2009). The other nodes connected to the ego are known as alters (Borgatti & Foster, 2003; Borgatti & Li, 2009). The ties between the professionals serve as communication and information conduits (Baron & Markman, 2000; Carnovale & Yeniturt; 2015). Amongst all the ties, we focus on the tie between the ego node and the alter that proposes a sustainability initiative to the ego. Studies utilizing network theory for the proliferation of sustainability have done so by viewing organizations as nodes (Tate et al., 2013; Tachizawa & Wong, 2014). This essay takes a granular approach by examining sustainability contagion at the individual level.

The study calls for the need to recognize sustainability teams as an essential facilitator of the SSCC phenomenon. The sustainability teams are the employees who by virtue of their job descriptions are responsible for addressing the sustainability needs of the supply chain. They may be internal, individuals in the sustainability departments within the organization, or external, individuals from external organizations such as NGOs, government agencies, etc. Business related communication is always a priority for the business team, supply chain professionals and the top management, who are responsible for the adoption of the initiative. Therefore, having sustainability teams in the communication network ensures that the business team can work on their priorities, but are informed of the sustainability requirements without having to balance the supply chain sustainability agenda on their already busy schedule. Depending on the organization, the sustainability teams were found to be responsible for evaluating the sustainability impact from both the internal and/or external operations. Thus, they affected the SSCC phenomenon.

The key factor in influencing the SCM professional to adopt a sustainability initiative is the business case for the actor. Furthermore, the business case can be framed as an economic or

risk mitigation initiative. The economic framing consists of communicating the organizational benefits from adopting the initiative (Flint & Golicic, 2009; Golicic & Smith, 2013; Paulraj, 2011). Communication framing using this schema faces minimum resistance by the actors since it makes a business case. Framing the initiative as a risk management strategy draws the actor's attention to the potential damage in terms of reputational loss or losses due to the scarcity of resources etc. that may be caused by failure to implement the initiative.

The value proposition varies based on the responsibility of the SCM personal. Thus, the sustainability contagion is a consequence of framing the communication to suit the organizational functionality of the actor. Therefore, while a consumer reputation related framing works for a marketing executive, a resource scarcity framing works better for a logistics personal. Another key determinant to SSCC is the SCM professional's disposition towards sustainability (Kirchoff et al., 2016; Signori et al., 2015). So, while there are some members of the supply chain network who are passionate about the cause and are ready to work towards a greater good, there are also others who find sustainability to be an added workload. SSCC is therefore, contingent in motivating the annoyed SCM professionals into adopting supply chain activities. Furthermore, the study finds that for SSCC to occur, it is important to motivate not only inter-organizational SCM professionals but also intra-organizational SCM professionals.

These findings from the study in Chapter 2 drive the studies outlined in Chapter 3 and Chapter 4. Chapter 3 is based on the finding that organizations need to focus on their employees since each employee has different individual orientations. Thus intra-organizational communication can also leverage the persuasive power of communication. Chapter four investigates how the literature from communication goal framing may be used to manipulate communication to nudge the focal organization SCM professionals into getting motivated to

discuss a SSCM initiative within their organization. Doing so increases the chances of a subsequent detailed investigation by the focal organization about the investigation of an SSCM initiative.

#### **D. Chapter 3 Summary**

The third chapter evaluates how normative messages may be used to motivate voluntary pro-environmental behavior in employees (VPBE) (Cialdini et al., 1990, 1991; 2004; Lülfs & Hahn, 2013, 2014). The field experiment evaluated truck drivers' intentions to reduce idling when they receive a weekly message based on the tenets of normative behavior. Truck idling is instances when the engine is on but the truck is not moving. This action has both environmental consequences due to air pollution, as well as organizational consequences due to unnecessary fuel cost. Trucking companies, can therefore, leverage the findings from this study to establish a minimal cost messaging system to achieve both organizational and environmental goals. This study therefore answers the following research question: can normatively framed messages be utilized by organizations to motivate pro-environmental employee behavior?

The messages in the system were scripted based on the principles of social and personal norms (Cialdini et al., 1991, 1990; Schwartz 1997). Social norms are informal beliefs about how an individual should behave in a group or within a society (Bicchieri, 2005; Lewis, 1969). Social norms can play a major role in influencing and changing individual behavior (e.g. Cialdini et al., 1991, 1990; Schultz et al., 2007, 2008). Cialdini et al. (1991) categorized social norms into descriptive norms and injunctive norms. Descriptive norms characterize “the perceptions of what most people do,” while an injunctive norm characterizes “the perception of what most people approve or disapprove” (Cialdini et al., 1991, pp. 203). Thus, while descriptive norms will refer to a common behavior that is observed, injunctive norms point to what ought to be done

(Cialdini et al., 1990). Researchers have found that actions are driven by a consideration of what might be right or wrong for the community or the environment, and are governed by the normative model (Cialdini et al., 1990; Guagnano, 2001; Nordlund & Garvill, 2002).

The focus theory of normative conduct states that social norms can dictate the individual decision-making process, particularly when the issue is made the salient or focal point (Cialdini et al., 1990; Kallgren et al., 2000). Saliency for an issue can be increased by persuasive normative messages (Cialdini, 2003; Schultz et al., 2008, 2007). The influencing power of descriptive norms stems from the ability to convey to the individual what others are doing, while injunctive norms specify to an individual what is required to be done (Cialdini, 1991; 1990). Also, previous research suggests that when it comes to changing individual behavior, injunctive norms often provide better results than descriptive norms (Cialdini et al., 2006; Cialdini, 2003). In certain situations, messages with descriptive norms are found to lead to an increase in the undesirable act (Cialdini et al., 2006; Cialdini, 2003). Focus theory can explain this “boomerang effect” by stating that the descriptive norms provide a standard for many individuals. Therefore, while it may help to decrease the undesirable behavior among the individuals who were above the standard, it has the negative effect of prompting individuals below the standard to increase the extent of undesired activity. An injunctive norm, on the other hand, is more suitable since it makes it explicitly clear to the individual what the approved behavior is (Cialdini & Goldstein, 2004).

When it comes to personal norms, the seminal work of Schwartz (1977) sheds light on the norm activation model (NAM). As per this model, an individual’s moral obligations may be used for predicting behavior. These moral obligations are known as personal norms. The NAM states that the two contributing factors for personal norms to play a role in individual behavior

are: 1) the realization that an individual's actions have certain consequences, and 2) the feeling of responsibility that comes with performing such behavior (Schwartz, 1977). The fulfillment of the two factors leads to the activation of a personal norm (Schwartz, 1977). Since personal norms stem from personal, moral obligations they play a part in motivating individuals to display pro-environmental behavior (De Groot et al., 2013; Harland et al., 2007, 1999).

The focus theory of normative conduct and the NAM both suggest that norms can be used in changing individual behavior (Cialdini et al., 1990; Schwartz et al., 1977). To identify the prevalent norm, the focus theory of normative conduct suggests that the norm should be made silent while, the NAM suggests the individual should recognize the consequences and take responsibility for his/her actions. Past research has found that the behavior may be modified as pro-environmental by the use of social and personal norms (Bamberg & Schmidt, 2003; Bratt, 1999; Harland et al., 1999). The two norms (social and personal) differ in the way they are processed by an individual. While social norms are associated with the affective beliefs, personal norms are associated with the cognitive beliefs (Thøgersen, 2006).

Social norms have been used in creating messages to promote a myriad of pro-environmental behaviors such as water conservation among hotel guests (Goldstein et al., 2008; Schultz et al., 2008), pro-environmental behavior advocacy in national parks (Cialdini et al., 2006), energy conservation (Nolan et al., 2008; Schultz et al., 2007) and recycling (Bratt, 1999). Previous works focus on the role of personal norms in pro-environmental behavior by making environment-friendly transportation decisions (Jansson et al., 2011; Klöckner and Blöbaum, 2010) and sustainable food choices (Arvola et al., 2008; Dean et al., 2008; Thøgersen & Ölander, 2006).

Truck idling has both environmental consequences due to air pollution, as well as organizational consequences due to unnecessary fuel costs. Messages can highlight the pro-organizational benefits of saving costs or the pro-environmental benefits of reducing pollution. The rationale behind utilizing pro-organizational messages stems from the organizational citizenship behavior (OCB) literature. OCB behavior is not incentivized by the organization, but is beneficial for the working of the organization (pp.3, Organ et al., 2005). OCB, therefore, is behavior that is not clearly stated in the job requirements, but by exhibiting OCB, an employee exceeds what is stated in the job profile (Organ et al., 2005; Organ 1997). Therefore, normative messages highlights different consequences to examine the impact of pro-organizational and pro-environmental messages on truck driver behavior.

Based on the tenets of focus theory of normative conduct and NAM, 645 trucks of a trucking company received one of five different kinds of messages over the course of thirteen weeks. The messages were pro-environmental messages using injunctive framing, messages using descriptive framing, pro-environmental messages using personal framing, pro-organizational messages using injunctive framing, and pro-organizational messages using personal framing. Injunctive framing highlights what should be done, while descriptive framing highlights what others are doing, and personal framing highlights the morally acceptable behavior. The pro-environmental versus pro-organizational messages highlight the gains to the environment versus the gains to the organization. The descriptive framing messages do not have any context and highlight the idling behavior of other drivers.

The study found that truck drivers reduce idling behavior based on injunctive pro-environmental and descriptive messages only. However, the change in behavior is short-lived as drivers return to previous idling behavior over time. Alternatively, the injunctive pro-

environmental group and the descriptive group reported a drop in idling behavior, which persisted over time. This result might be attributed to the change in truck drivers during the normal operations. Thus, as new drivers were made aware of the messages they changed the behavior, and other drivers replaced them before message fatigue could set in. Therefore, the findings reflect the suitability of such messaging schemes where there are high turnover rates such as in the trucking industry.

#### **E. Chapter 4 Summary**

This study presented in this chapter evaluates the role of inter-organizational communication in motivating the focal organization's SCM professional to discuss the initiative within their organization. This is the critical first hurdle that must be overcome to ensure that the focal organization then considers the cost-benefit analysis for the implementation of the project. The study employs a vignette-based study with participants roleplaying as suppliers asked by the buyer to consider discussing a sustainable SCM initiative within their organization. The study investigates the efficacy of messages based on the tenets of goal framing (positive versus negative framing) and highlights different consequences (organizational versus environmental) based on an individual's job focus (focusing on economic and sustainability benefits versus focusing only on economic benefits). The study reveals that for individuals with job functions including sustainability, negative framing is influential, but there are no effects of message consequence. On the other hand, for individuals whose job function does not include sustainability, highlighting the organizational effects is beneficial, but there is no effect of framing. Furthermore, the experiments establish that the participant's intention to discuss the initiative within their organization is diminished when they consider the communicating actor's

intentions as unfair. This has important implications for organizations trying to influence their supply chain partners to consider working on SSCM initiatives.

Research has leveraged influence theory to examine how a network influences an individual to engage, as well as influence others towards sustainability (Winchman et al., 2016). In an inter-organizational context, commitment, consultation, and inspirational appeals affect the affective commitment to a project (Winchman et al., 2016). In this study, the effectiveness of communication according to the goal framing literature, to ascertain the most influential manner of proposing sustainability initiatives to supply chain members is investigated. At the individual level, while studies have looked into persuasion strategies at the intra-organizational context there is relatively less work at the inter-organizational context (Gattiker & Carter, 2010, Gattiker et al., 2014). The following research questions are addressed in the study:

Research Question 1: *When influencing a SCM professional from a different organization, is it more efficient to communicate the loss or attainment of goals?*

Research Question 2: *How does aligning the message consequences with the job responsibilities increase the persuasiveness of sustainability communication?*

Research Question 3: *Does the SCM actor's intention to discuss the initiative within the organization change when the supplier's request is deemed unfair?*

Under the tents of goal framing, the positive frame draws the attention of the recipients of the message to the positive consequence (gain), as opposed to the negative frame, which draws attention to the negative consequence (loss) (Levin et al., 1998). Maheshwaran and Meyers-Levy (1990) found that the degree of involvement with the issue was an important factor influencing the intention to change behavior. The goal framing literature suggests that negative framing is

more effective than positive framing, since individuals are in general more motivated to avoid a loss than to attain a gain of similar magnitude (Krishnamurthy et al., 2001; Meyerowitz & Chaiken, 1987). The effects of message consequence are hypothesized as dependent on the job involvement of the SCM actor.

A 2 (Job involvement: Sustainability goals: Yes/No) x 2 (Goal framing: Positive versus Negative) x 2 (Consequence: Organizational versus Environmental) vignette-based study was conducted to answer the research questions. The job involvement manipulation is carried out by specifying the job responsibility as including sustainability goals, in addition to lowering the costs. The goal framing manipulation is carried out by presenting the information as gaining an opportunity (positive frame) or losing an opportunity (negative frame). Finally, the context manipulation specifies whether by adopting the technology, the decision involved saves costs or reduces greenhouse gas emissions. This is consistent with the finding from the grounded theory study, outlined in Chapter 2, that the business case for a sustainability initiative needs to be framed as per the responsibility of the supply chain actor, thus highlighting how an initiative benefits the SCM professional will be more beneficial for sustainability contagion as opposed to how the initiative benefits the environment. The study also examines the effect of fairness by evaluating the within participant reduction in discussion intentions when the participant is asked to share the profits from the technology by reducing prices.

Three hundred and seventy-three students (Female = 32.2%, International = 14.5%, Sophomore = 22.8 %, Junior = 61.7 %, Senior = 15.5%, Mean Age = 22.31) enrolled in a supply chain undergraduate course in a South-Eastern public university were recruited for the experiment, in return for a bonus grade incentive that equaled 1% of the total possible points. Of these, the data from three hundred and thirteen students who passed an attention check was used

for the analysis. Nonparametric revealed that participants in the job involvement with sustainability treatment were more likely to discuss sustainability initiatives within the company when a negative framing was used. Thus, the prospect of letting go of an opportunity was more influential than the possibility of gaining from an opportunity. Furthermore, it did not matter whether the communication highlighted the cost benefits versus the sustainability benefits from the project. However, when the functional role of the recipient did not involve sustainability, highlighting the organizational consequence was found to positively influence the participant's intentions to discuss the initiative within the organization. There were no effects of goal framing. Also, there was a decrease in disunion intentions once the supplier perceived that the buyer was requesting the implementation of SSCM initiatives for their own business.

## **F. Dissertation Implications**

This dissertation is comprised of three studies focusing on the role of communication in the creation of sustainable supply chains. It assumes SCM professionals are the change bearers in the creation of sustainable supply chains by adopting SSCM initiatives. All three essays in the dissertation utilize communication as a tool to influence SCM actors (Ashcraft et al., 2009; Cornelissen et al., 2015). The role of communication in SCM literature has been a tool of information sharing to relay the expectations and improve coordination (Busse et al., 2016, Liu et al., 2012). The dissertation evaluates the efficacy of effective communication in changing SCM professional behavior.

The three essays in the dissertation contribute to different theories. These theories are outlined in detail in the relevant chapters and the conclusion, Chapter 5. The grounded theory study in Chapter 2 draws on network theory to present the communication centered SSCC model. The SSCC models of contagion, the role of sustainability teams as structural holes, the

top-down approach, and the proximity to the focal actors and communication actors are all tenets of network theory and successfully explain the SSCC phenomenon (Borgatti & Li, 2009; Burt, 1987). The study also draws on construal level theory to explain how providing an actionable path of "How" the SSCM initiative should be implemented more effective than providing justifications of "Why" the SSCM initiative is beneficial for SSCC (Liberman & Trope, 1998; Liberman et al., 2002). Essay 2 outlined in Chapter 3, the field study investigation, contributes to the focus theory of normative conduct from social psychology, by evaluating the persistence of behavioral effects over time. Finally, Essay 3 draws on goal framing and communication literatures to highlight the moderating role of SCM actors' job responsibility. This article also verifies the role of ensuring fairness in communications when asking the supplier to commit to a SSCM initiative (Hornibrook et al., 2008; Liu et al., 2012).

The findings from the dissertation has several practical implications as well, particularly for organizations that are seeking to motivate employees and supply chain partners without the use of incentives or coercion. The SSCC model outlined in Chapter 2, presents a tool that practitioners can use to influence their partners to work voluntarily on SSCM initiatives. The SSCC model strives to generate a better business case for the SCM professional based on different factors. To increase the likelihood of the focal actor working on a SSCM initiative, the grounded theory study suggests asking several competitors to work together, utilizing the expertise of sustainability teams, and/or leveraging a top-down communication approach among others. The findings from the field investigation, Essay 2, highlight the effectiveness of utilizing descriptive messages, summarizing the approved behavior of other employees in promoting VPBE. Finally, Essay 3 outlined in Chapter 4, confirms the finding from the grounded theory study that inter-organizational communication can include environmental consequences when

sustainability is part of the job description, thus aligning the communication to the work responsibility. In other instances, the business case is best presented by utilizing the organizational consequence.

## **G. Dissertation Outline**

This first chapter of the dissertation summarizes the motivation and the overarching research question for this three-study dissertation. It also introduces the theoretical background, methodology, and key findings from each study. The dissertation is written in the publishable paper's style, and Chapters 2, 3, and 4 represent a complete investigation on their own. The next three chapters present the detailed investigation of the grounded theory study, field experiment, and vignette-based study, respectively. Chapter 5 is the conclusion and summarizes the theoretical contributions and practical implications of each of the three studies and the dissertation as a whole.

## H. References

- Andersen, M., & Tage Skjoett-Larsen. (2009). Corporate social responsibility in global supply chains. *Supply Chain Management: An International Journal*, 14(2), 75-86.
- Arvola, A., Vassallo, M., Dean, M., Lampila, P., Saba, A., Lähteenmäki, L., & Shepherd, R. (2008). Predicting intentions to purchase organic food: The role of affective and moral attitudes in the theory of planned behaviour. *Appetite*, 50(2), 443-454.
- Ashcraft, K. L., Kuhn, T. R., & Cooren, F. (2009). 1 Constitutional amendments: "Materializing" organizational communication. *Academy of Management Annals*, 3(1), 1-64.
- Ayuso, S., Roca, M., & Colomé, R. (2013). SMEs as "transmitters" of CSR requirements in the supply chain. *Supply Chain Management: An International Journal*, 18(5), 497-508.
- Bamberg, S., & Schmidt, P. (2003). Incentives, morality, or habit? predicting students' car use for university routes with the models of ajzen, schwartz, and triandis. *Environment and Behavior*, 35(2), 264-285.
- Bansal, P. (2003). From issues to actions: The importance of individual concerns and organizational values in responding to natural environmental issues. *Organization Science*, 14(5), 510-527.
- Baron, R. A., & Markman, G. D. (2003). Beyond social capital: The role of entrepreneurs' social competence in their financial success. *Journal of Business Venturing*, 18(1), 41-60.
- Bicchieri, C. (2005). *The grammar of society: The nature and dynamics of social norms* Cambridge University Press.
- Borgatti, S. P., & Foster, P. C. (2003). The network paradigm in organizational research: A review and typology. *Journal of Management*, 29(6), 991-1013.
- Borgatti, S. P., & Li, X. (2009). On social network analysis in a supply chain context\*. *Journal of Supply Chain Management*, 45(2), 5-22.
- Bratt, C. (1999). The impact of norms and assumed consequences on recycling behavior. *Environment and Behavior*, 31(5), 630-656.
- Brockhaus, S., Kersten, W., & Knemeyer, A. M. (2013). Where do we go from here? progressing sustainability implementation efforts across supply chains. *Journal of Business Logistics*, 34(2), 167-182.
- Burt, R. S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, 92(6), 1287-1335.

- Busse, C., Schleper, M. C., Niu, M., & Wagner, S. M. (2016). Supplier development for sustainability: Contextual barriers in global supply chains. *International Journal of Physical Distribution & Logistics Management*, 46(5), 442-468.
- Cantor, D. E., Morrow, P. C., & Montabon, F. (2012). Engagement in environmental behaviors among supply chain management employees: An organizational support theoretical perspective. *Journal of Supply Chain Management*, 48(3), 33-51.
- Carnovale, S., & Yeniyurt, S. (2015). The role of ego network structure in facilitating ego network innovations. *Journal of Supply Chain Management*, 51(2), 22-46.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, 12(4), 105-109.
- Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence*, 1(1), 3-15.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annual Review of Psychology*, 55, 591-621.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, 24, 201-234.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (2004). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Readings about the Social Animal*, New York: Worth Publishers, 56-79.
- Cornelissen, J. P., Durand, R., Fiss, P. C., Lammers, J. C., & Vaara, E. (2015). *Putting Communication Front and Center in Institutional Theory and Analysis*, 40(1), 10-27.
- Daily, B. F., & Huang, S. (2001). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of Operations & Production Management*, 21(12), 1539-1552.
- De Groot, J. I., Abrahamse, W., & Jones, K. (2013). Persuasive normative messages: The influence of injunctive and personal norms on using free plastic bags. *Sustainability*, 5(5), 1829-1844.

- Dean, M., Raats, M. M., & Shepherd, R. (2008). Moral concerns and consumer choice of fresh and processed organic Foods<sup>1</sup>. *Journal of Applied Social Psychology*, 38(8), 2088-2107.
- Flint, D. J., & Golicic, S. L. (2009). Searching for competitive advantage through sustainability. *International Journal of Physical Distribution & Logistics Management*, 39(10), 841-860.
- Gattiker, T. F., & Carter, C. R. (2010). Understanding project champions' ability to gain intra-organizational commitment for environmental projects. *Journal of Operations Management*, 28(1), 72-85.
- Gattiker, T. F., Carter, C. R., Huang, X., & Tate, W. L. (2014). Managerial commitment to sustainable supply chain management projects. *Journal of Business Logistics*, 35(4), 318-337.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35(3), 472-482.
- Golicic, S. L., & Smith, C. D. (2013). A meta-analysis of environmentally sustainable supply chain management practices and firm performance. *Journal of Supply Chain Management*, 49(2), 78-95.
- Guagnano, G. A. (2001). Altruism and market-like behavior: An analysis of willingness to pay for recycled paper products. *Population & Environment*, 22(4), 425-438.
- Harland, P., Staats, H., & Wilke, H. A. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior<sup>1</sup>. *Journal of Applied Social Psychology*, 29(12), 2505-2528.
- Harland, P., Staats, H., & Wilke, H. A. (2007). Situational and personality factors as direct or personal norm mediated predictors of pro-environmental behavior: Questions derived from norm-activation theory. *Basic and Applied Social Psychology*, 29(4), 323-334.
- Hornibrook, S., Fearne, A., & Lazzarin, M. (2009). Exploring the association between fairness and organisational outcomes in supply chain relationships. *International Journal of Retail & Distribution Management*, 37(9), 790-803.
- Jansson, J., Marell, A., & Nordlund, A. (2011). Exploring consumer adoption of a high involvement eco-innovation using value-belief-norm theory. *Journal of Consumer Behaviour*, 10(1), 51-60.

- Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin*, 26(8), 1002-1012.
- Kirchoff, J. F., Omar, A., & Fugate, B. S. (2016). A behavioral theory of sustainable supply chain management decision making in Non-exemplar firms. *Journal of Supply Chain Management*, 52(1), 41-65.
- Klößner, C. A., & Blöbaum, A. (2010). A comprehensive action determination model: Toward a broader understanding of ecological behaviour using the example of travel mode choice. *Journal of Environmental Psychology*, 30(4), 574-586.
- Krishnamurthy, P., Carter, P., & Blair, E. (2001). Attribute framing and goal framing effects in health decisions. *Organizational Behavior and Human Decision Processes*, 85(2), 382-399.
- Lee, S., & Klassen, R. D. (2008). Drivers and enablers that foster environmental management capabilities in small-and medium-sized suppliers in supply chains. *Production and Operations Management*, 17(6), 573-586.
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76(2), 149-188.
- Lewis, D. (1969). *Convention: A philosophical Study* Harvard univ. Press, Cambridge,
- Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, 38(6), 523-534.
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, 75(1), 5.
- Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, 25(6), 1075-1082.
- Liu, Y., Huang, Y., Luo, Y., & Zhao, Y. (2012). How does justice matter in achieving buyer-supplier relationship performance? *Journal of Operations Management*, 30(5), 355-367.
- Lülfes, R., & Hahn, R. (2013). Corporate greening beyond formal programs, initiatives, and systems: A conceptual model for voluntary pro-environmental behavior of employees. *European Management Review*, 10(2), 83-98.
- Lülfes, R., & Hahn, R. (2014). Sustainable behavior in the business sphere: A comprehensive overview of the explanatory power of psychological models. *Organization & Environment*, 27(1), 43-64.

- Maheswaran, D., & Meyers-Levy, J. (1990). The influence of message framing and issue involvement. *Journal of Marketing Research*, 27, 361-367.
- Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). Supply chain management and its relationship to logistics, marketing, production, and operations management. *Journal of Business Logistics*, 29(1), 31-46.
- Meyerowitz, B. E., & Chaiken, S. (1987). The effect of message framing on breast self-examination attitudes, intentions, and behavior. *Journal of Personality and Social Psychology*, 52(3), 500-510.
- Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality & Social Psychology Bulletin*, 34(7), 913-923.
- Nordlund, A. M., & Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior*, 34(6), 740-756.
- Organ, D. W., Podsakoff, P. M., & MacKenzie, S. B. (2005). *Organizational citizenship behavior: Its nature, antecedents, and consequences* Sage Publications.
- Organ, D. W. (1997). Organizational citizenship behavior: It's construct clean-up time. *Human Performance*, 10(2), 85-97.
- Pagell, M., Wiengarten, F., & Fynes, B. (2013). Institutional effects and the decision to make environmental investments. *International Journal of Production Research*, 51(2), 427-446.
- Paulraj, A. (2011). Understanding the relationships between internal resources and capabilities, sustainable supply management and organizational sustainability\*. *Journal of Supply Chain Management*, 47(1), 19-37.
- Porteous, A. H., Rammohan, S. V., & Lee, H. L. (2015). Carrots or sticks? improving social and environmental compliance at suppliers through incentives and penalties. *Production and Operations Management*, 24(9), 1402-1413.
- Pratt, M. G. (2009). From the editors: For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research. *Academy of Management Journal*, 52(5), 856-862.
- Russo, M. V., & Harrison, N. S. (2005). Organizational design and environmental performance: Clues from the electronics industry. *Academy of Management Journal*, 48(4), 582-593.
- Schultz, W. P., Khazian, A. M., & Zaleski, A. C. (2008). Using normative social influence to promote conservation among hotel guests. *Social Influence*, 3(1), 4-23.

- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science, 18*(5), 429-434.
- Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology, 10*, 221-279.
- Searcy, C., & Buslovich, R. (2014). Corporate perspectives on the development and use of sustainability reports. *Journal of Business Ethics, 121*(2), 149-169.
- Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production, 16*(15), 1699-1710.
- Signori, P., Flint, D. J., & Golicic, S. (2015). Toward sustainable supply chain orientation (SSCO): Mapping managerial perspectives. *International Journal of Physical Distribution & Logistics Management, 45*(6), 536-564.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research* Newbury Park, CA: Sage.
- Tachizawa, E. M., & Wong, C. Y. (2015). The performance of green supply chain management governance mechanisms: A supply network and complexity perspective. *Journal of Supply Chain Management, 51*(3), 18-32.
- Tate, W. L., Ellram, L. M., & Gölgeci, I. (2013). Diffusion of environmental business practices: A network approach. *Journal of Purchasing and Supply Management, 19*(4), 264-275.
- Thøgersen, J. (2006). Norms for environmentally responsible behaviour: An extended taxonomy. *Journal of Environmental Psychology, 26*(4), 247-261.
- Thøgersen, J., & Ölander, F. (2006). The dynamic interaction of personal norms and Environment-Friendly buying behavior: A panel Study1. *Journal of Applied Social Psychology, 36*(7), 1758-1780.
- Wichmann, B. K., Carter, C. R., Kaufmann, L., & Wilson, J. R. (2016). Making environmental SCM initiatives work—Moving beyond the dyad to gain affective commitment. *Journal of Supply Chain Management, 52*(1), 21-40.

## **II. Chapter 2**

### **A. Introduction**

In 2005, Ford introduced the Aligned Business Framework into its operations (United Nations Global Compact Report). Ford designed and implemented practices with their select suppliers to ensure that their social and environmental goals were met. In return for increased business volumes, the suppliers voluntarily adopted principles aligned with Ford's sustainability values. Thus, by developing a business case, i.e. increased business, for fostering sustainable activities, Ford has managed to embed sustainability into their suppliers' operations. Motivated by this phenomenon of expanding sustainability across the firm's boundaries, this study investigates the factors influencing the voluntary initiation of sustainability activities into an organization's operations when propositioned by a downstream supply chain organization. As a result, the upstream members are motivated to realize sustainability goals without any dissatisfaction associated with the adoption of sustainability activities by the use of coercion. (Brockhaus et al., 2013; Krause et al., 2009; Marshall et al., 2016; Mitchell et al., 1997; Rego et al., 2014; Tachizawa & Wong, 2015).

Previous studies have evaluated the organizational benefits of implementing sustainability initiatives (Klettner et al., 2014; Kleine & Von Hauff, 2009; Linton et al., 2007). This study focuses on how the inter-organizational communication network and the subsequent communication influence supply chain management (SCM) professionals' affinity towards a sustainability initiative. Communication is not only a medium to exchange information, but by focusing on a salient issue, also a potent tool to impact behavior (Cornelissen et al., 2015). In this study, sustainability conversation is defined as the communication between two actors regarding the assimilation or adoption of sustainable activities into the supply chain. While the

communication can occur between intra-organizational actors, this study focuses solely on inter-organizational sustainability conversations. Previous studies have established the important role of buyers and managers in the adoption of sustainability issues (Ehrgott et al., 2011; Huq et al., 2016; Thomas & Lamm, 2012). Our study advances the literature by investigating how sustainability conversations influence SCM and top management professionals to embrace an initiative. Thereby it contributes to the sustainability literature by focusing on the critical, but often overlooked, role that communication plays in the decision to adopt a sustainability project. This approach is also different from the accepted role of sustainability reports as sustainability communications that influence the consumers (Parguel et al., 2011; Reilly & Hynan, 2014; Seele & Lock, 2014)

Sustainable supply chain management (SSCM) encompasses both social and environmental goals while ensuring that the economic viability of any processes to achieve those goals generates a long-term advantage for the organization (Carter & Rogers, 2008). This research endeavor examines the voluntary incorporation of SSCM practices into the operations of an upstream organization. Previous literature has established that downstream members of the supply chain often introduce the impetus of sustainability within the supply chains due to external pressure (Ayuso et al., 2013; Andersen & Skjoett-Larsen, 2009). In this study, therefore, the focal firm and their actors are upstream of the communicating firm and its actors. The communicating actor's success in influencing the focal actor results in the assimilation of SSCM activities into the supply chain. In the context of sustainable activities this phenomenon is termed as sustainable supply chain contagion (SSCC) and furthers the literature on the contagion of supply chain activities (McFarland et al., 2008). SSCC is therefore, the propagation of SSCM practices from the communicating organization to the focal organization, by convincing the focal

firm's SCM professionals to work on the initiative. The definition captures the role of the SCM professional as the agent responsible for the SSCC. Moreover, the study examines voluntary SSCC, wherein the focal organization is not mandated to adopt an initiative. The findings from the research are of significance to industry practitioners striving to meet the organizational sustainability goals by persuading their suppliers to take up SSCM practices. The results outline factors professionals can leverage to influence their supply chain partners into voluntarily adopting SSCM practices. Thus, the study provides a tool to professionals that they can utilize in inter-organizational sustainability conversations with their suppliers and improve the likelihood of voluntary SSCC.

The overarching research question of this research endeavor is: how does voluntary SSCC occur? The study also seeks to answer sub-questions related to voluntary SSCC. First, it outlines the role of intra-organizational professionals directly involved with sustainability initiatives. In most cases, the professionals work within the sustainability teams in the organizations and their work responsibilities are aligned to strive for SSCC phenomenon. Second, the study investigates the role of communication in the persuasion of supply chain professionals to adopt sustainability initiatives within the organization. By crafting sustainability conversations in a manner such that it resonates with the functional responsibility of the SCM actor, the communicator increases the likelihood of voluntary SSCC phenomenon. Finally, it highlights organizational and individual level factors, which influence SCM professionals to adopt non-mandated sustainability initiatives.

To investigate voluntary SSCC, this study utilizes a grounded theory approach (Glaser & Strauss 1967; Strauss & Corbin, 1990). Propositions about SSCC phenomenon are presented based on interviews with 21 professionals, each from organizations in different supply chain

echelons and differing organizational departments. The interviewees highlighted that for SSCC to occur it is important during communications to present the business case of the SSCM practice to the focal actors. The business case seeks to establish sustainability as ensuring financial performance value from a sustainable initiative as opposed to only a program to promote sustainability (Epstein & Roy, 2003; Hart & Milstein, 2003; Salzmann et al., 2005, Schreck, 2011; Van Marrewijk, 2003). Furthermore, the analysis showed that persuasive sustainability conversations present the business case of an SSCM practice by promoting the economically beneficial and/or risk mitigating aspect of the practice. The communication is found to be particularly useful in persuading the focal actor when the SSCM is presented as advantageous to their departmental function versus the organization. This finding emphasizes the need to tailor the communication based on the professional designation of focal actors and highlights the benefits to their departmental role from the SSCM project. Thus, while articulating the same project to different actors in a focal firm, communicating actors need to focus on the departmental role of the recipient as opposed to the often utilized, organizational benefit from the initiative (Brønn & Vidver-Cohen, 2008; Dangelico & Pujari, 2010; Matos & Hill, 2007; Wagner, 2010; Waller et al., 2015). Consequently, these focal actors' resistance to SSCM initiatives is reduced. The analysis also revealed network, communication, and structural factors affecting SSCC.

First, in situations where the business case for a sustainability initiative for the focal professional is weak at the network level, it is beneficial to involve other supply chain members who will be affected in a similar manner as the focal firm, from the initiative. This phenomenon is known as the structural equivalence model (Burt, 1987). This finding highlights the need for the downstream communicating actors to include multiple partners in the sustainability

conversations to ensure that the focal actors do not feel that their organization might be financially disadvantaged due to the initiative. The possible adverse effects for one focal firm are ameliorated when supply chain members (competitors for the focal firm) with similar networks (structurally equivalent) jointly work on an initiative resulting in an SSCC. The interviews also reveal the critical role of sustainability teams as facilitators of sustainability contagion. Sustainability teams are comprised of internal members such as sustainability departments, as well as external members such as NGOs and government agencies. Additionally, the teams' job description entails a focus on sustainability. When working with the other departmental teams comprising of the top management and SCM teams, the sustainability teams assist in the SSCC. The members from various departments can leverage the knowledge of the sustainability teams to develop the business case without compromising their own departmental responsibilities. In other words, the sustainability teams allow the operational teams to focus on their core operational aspects while providing valuable insights, aiding in the proliferation of sustainability while augmenting the business case for the supply chain. While the role of external sustainability teams has been studied, the critical role of internal sustainability teams, now a provincial department in many organizations, has been overlooked (Arenas et al., 2009; Hyatt & Johnson, 2016; Jamali & Kershishian, 2009; Wu & Pagell, 2011). The interviewees also suggested utilizing a top-down communication approach when trying to justify the implementation of an SSCM project that did not align with the departmental benefits of the focal actor, but did merit a business case for the organization.

Second, when it comes to communication itself, the interviews highlighted the importance of stressing "how" the focal firm can implement the sustainability initiative as opposed to "why" the focal firm should adopt the initiative. Using this communication approach

facilitates the SSCC when the business case is weak because it clearly lays down the path, thereby allowing the focal actor to manage the tradeoff between what might not be perceived as a departmental responsibility. This approach is consistent with the concrete problem-solving approach in the literature (Lieberman et al., 2002; Lieberman & Trope, 1998). This application of the theory presents a novel approach to an issue that many organizations are struggling with, i.e. lays the groundwork to the initiative such that there are few possible excuses for the focal actor not to implement the SSCM project. Furthermore, in today's dynamic workforce environment where SCM managers keep changing positions within the organizations, maintaining consistent sustainability requirement is more likely to result in SSCC. When there is inconsistency due to misaligned priorities of different communication actors from the same organizations, the upstream members cannot keep up with the ever-changing sustainability requirements and are not motivated to work on a SSCM initiative.

Third, the study findings also reflect the role of structural factors such as power, collaboration, organizational sustainability orientation, and individual sustainability orientation in facilitating the contagion of sustainability (Beske & Seuring, 2014; Kirchoff et al., 2015; Kleine & Hauff, 2009; Pagell & Wu, 2009).

Previous studies evaluating sustainability in supply chains have used the network perspective but only at the organizational level (De Clercq et al., 2015; Tate et al., 2013; Vurro et al., 2009). This research endeavor examines the sustainable supply chain contagion phenomenon by focusing on the focal actor while acknowledging the organizational and departmental/functional factors that inform the individual on sustainable decision-making. Thus, the study makes several contributions. 1) It establishes the importance to communicate aligning the benefits from the SSCM initiative with the departmental role of the focal actor as opposed to

organizational benefit from the initiative. 2) It highlights the importance of internal and external sustainability teams in SSCC phenomenon. 3) It outlines the pathways of efficient communication networks for promoting SSCC and, 4) it identifies organizational and individual factors that dampen the SSCC impetus. Therefore, we generate a holistic, multi-level network perspective of upstream voluntary SSCC and examine it at the organizational (macro), departmental (meso), and individual (micro) levels. Thus, the study contributes to the academic literature while providing insights to actors within communicating and focal firms who desire to extend SSCM across organizational boundaries.

## **B. Literature Review**

Integrating SSCM practices into the supply chain operations results in efficiencies, which translate to economic performance (Carter & Rogers, 2008; Linton et al., 2007; Seuring & Mueller, 2008). Firms can do so by examining the utility for every organization and individual involved in the supply chain (Sodhi 2015). Therefore, while deciding to implement a SSCM initiative, the utility for customers, employees, supply chain partners such as distributors and wholesalers, logistic providers, legislative bodies, NGOs, etc. needs to be taken into account. The professional actor in charge of the implementation process must also handle the complicated task of balancing the priorities of all involved in the supply chain. Our research examines how the SCM professionals facilitate the SSCC process by persuading the supply chain partners to adopt sustainability initiatives voluntarily.

Sustainable supply chain initiatives are a mix of best practices and new innovative ideas that need to be implemented successfully into the supply chain (Pagell & Wu, 2009). These initiatives may be carried out by leveraging the organizational power and/or collaborating with the supply chain partners (Brockhaus et al., 2013; Gold et al., 2010; McDonald & Young;

Tachizawa & Wong, 2014). An inherent disadvantage of a dominant organization pressuring lower tier members, especially first-tier members, into adopting an initiative is the dissatisfaction induced into the supply chains (Tachizawa & Wong, 2014; Brockhaus et al., 2013). Nair et al. (2016), however, proposes that once a dominant firm introduces a sustainable innovation into a supply chain, the firm loses control over the innovation and the system dynamics ensure that other partners infuse it into different supply chains, resulting in the assimilation of the initiatives into various other supply chains. Collaboration has also been found useful in implementing sustainability initiatives within a supply chain (Tachizawa & Wong, 2014; Vachon & Klassen, 2008).

Both communication and information sharing play a key role in ensuring that members develop a common understanding of the issues and work efficiently towards implementing a sustainability initiative (Galandris et al., 2015; Kleine & Von Hauff, 2009; Lu et al., 2012). While studies have stressed the importance of collaboration and information sharing, they have overlooked the process of effective information sharing to influence supply chain members to adopt an initiative voluntarily. Our research addresses this gap in the literature by examining the manner in which the sustainability proposition may be presented to a SCM professional from the upstream organization to increase the likelihood of acceptance. Additionally, we propose how organizational and individual factors influence this communication process.

Scholars have mostly examined the implementation of a sustainable supply chain initiative at an organizational level (e.g. Busee et al. 2016; Raur & Koffman, 2015; Tate et al., 2013). The unit of analysis of our study is the individual. An individual's commitment to the environment and organizational support and outlook towards sustainability has been found to positively influence employee participation in environmental initiatives (Cantor et al., 2012;

Cantor et al., 2013). The presence of a project champion has been found to facilitate the adoption of a sustainability initiative, within an organization (Gattiker et al., 2014; Gattiker & Carter, 2010). Furthermore, individuals who can link the SSCM initiatives to personal goals and aspirations, achieve greater success in influencing other organizational members to adopt the initiatives (Gattiker & Carter, 2010; Winchmen et al., 2016). Our research examines factors that will result in SCM professional's lower resistance towards a sustainability initiative. By doing so, we extend the previous works that emphasize the need to understand the adoption of sustainability practices from a SCM professional's perspective (Cantor et al., 2012, Kirchoff et al., 2016; Signori et al., 2015).

### **C. Methodology**

A grounded theory building approach was adopted to investigate the SSCC phenomenon (Glaser & Strauss 1967; Strauss & Corbin, 1990; Pratt 2009). Semi-structured interviews were utilized to understand the factors affecting voluntary adoption of sustainability initiatives by the focal organization, emphasizing especially on the persuasive power of upstream communication (Rowley, 2012). In keeping with the guidelines of Strauss and Corbin (1990), data was analyzed parallel to the data collection process.

Following the procedures for theoretical sampling, the initial interviews were set up by approaching SCM professionals associated with a consortium, while focusing on sustainability issues associated with a public South Eastern American University. Potential participants were contacted via email, stating our research objectives and inquiring about their willingness to participate in the study. After analyzing the first six interviews and based on the emerging categories, it was apparent that SSCC and its communication involves professionals from different departmental functions and different communication channels. Therefore, per the tenets

of theoretical sampling, the interview pool was widened to include managers from various departments (Strauss & Corbin, 1990). The interview participants, therefore, included professionals from the buying, sales, and marketing functions, in addition to the professionals focused solely on sustainability. These procedures ensured that the results were representative of the SSCC phenomenon and a consistency of findings was achieved (Corbin & Strauss, 1990). Furthermore, it generated a holistic view from the viewpoint of different actors from the focal as well as the communicating firm. The organizational focus on sustainability of the interviewed professionals also varied in our sample. On one hand, we spoke with managers in organizations that were actively involved in sustainability, i.e. had dedicated sustainability teams and a proactive attitude towards sustainability, while on the other hand, we also spoke with managers at organizations where sustainability engagement was reactive and often limited to the certification process, i.e. mandated to maintain legitimacy in the industry. Therefore, the sample had a significant variance in the extent of organizational support towards sustainability and the extent of sustainability communication with which the actor was involved.

Most of the interviews were conducted over the phone and recorded. Two of the interviewees did not grant permission for us to record the interviews. In these instances, the interviewer's notes were included in the analysis. Data collection ceased once saturation was achieved (Mello & Flint; 2009; Suddaby 2006). The number of interviews was greater than the acceptable number for interviewing heterogeneous samples (Carter & Jennings, 2002; Green & Thorogood, 2009; Morimoto, et al., 2005). On average, the interviews lasted for 30 minutes. All interviews were transcribed for analysis. Table 1 summarizes the profile of the 21 interviewees (Female = 3, Average work experience = 17.2 years) who participated in the interview. The participants were from three primary industries, retail, manufacturing, and logistics. Two of the

participants were from organizations that acted as independent consultants, which focused on sustainable issues for the industry.

The analysis was conducted using Nvivo software. Data was analyzed using the open, axial, and selective coding procedures (Strauss & Corbin, 1990). In the open coding process, the data was coded into sub-categories and themes. The axial coding involved comparing and contrasting as well as allocating the subcategories to categories. Finally, in the selective coding, we reviewed and refined the theory. Coding discrepancies were resolved after consultation with other researchers until there was complete agreement on the coding categories. The trustworthiness of the results was assessed on the criterion of credibility, transferability, dependability, confirmability, integrity, fit, understanding, generality, and control (Brockhaus et al., 2013; Hirschman, 1986; Kirchoff et al., 2015). Table 2 summarizes the measures taken to ensure the trustworthiness of our analysis.

**Table 1:** Profile of participating professionals

Alias	Industry	Departmental Team	SCM function	Sustainability Team within Organization	Focal versus Communicator	Years Industry Experience
<b>Participant_1</b>	Manufacturing	SCM	Purchasing	No	Both	13
<b>Participant_2</b>	Manufacturing	SCM	Sales/Marketing	No	Buyer	2
<b>Participant_3</b>	Manufacturing	Top Management	Operations/Logistics	No	Both	27
<b>Participant_4</b>	Manufacturing	SCM	Operations/Purchasing	No	Communicator	30
<b>Participant_5</b>	Manufacturing	Top Management & Sustainability	N/A	Not Applicable	Communicator	18
<b>Participant_6</b>	Retail	SCM	Sales	No	Focal	4
<b>Participant_7</b>	Retail	SCM	Purchasing	No	Communicator	18
<b>Participant_8</b>	Retail	Top Management	Marketing	No	Focal	32
<b>Participant_9</b>	Retail	Sustainability	N/A	Not Applicable	Communicator	17
<b>Participant_10</b>	Retail	Sustainability	N/A	Yes	Communicator	8
<b>Participant_11</b>	Retail	Sustainability	N/A	Yes	Communicator	14
<b>Participant_12</b>	Retail	Top Management & Sustainability	Operations	Yes	Both	21
<b>Participant_13</b>	Retail	Top Management & Sustainability	Operations	Yes	Communicator	36
<b>Participant_14</b>	Retail	Sustainability	N/A	Yes	Communicator	3
<b>Participant_15</b>	Retail	Top Management & Sustainability	Operations	Yes	Both	12
<b>Participant_16</b>	Retail	SCM	Sales/Marketing	Yes	Communicator	7
<b>Participant_17</b>	Retail	Top Management & Sustainability	N/A	Yes	Both	18
<b>Participant_18</b>	Retail	SCM	Sales/Operations	Yes	Communicator	28
<b>Participant_19</b>	Retail and Manufacturing	Top Management & SCM	Sales/Marketing/Logistics	No	Both	10
<b>Participant_20</b>	Transportation and Logistics	Sustainability & SCM	Operations	No	Focal	31
<b>Participant_21</b>	Transportation and Logistics	Sustainability	N/A	Yes	Both	12

**Table 2:** Trustworthiness of data

<b>Trustworthiness Criteria</b>	<b>Method of addressing criteria in this study</b>
<p><b>Credibility</b> Extent to which the results appear to represent the data</p>	<ul style="list-style-type: none"> <li>• Simultaneous analysis and collection of data over 12 months for feedback.</li> <li>• Coding and text analysis by independent researchers.</li> <li>• Research findings reported to multiple members.</li> <li>• Result: Emergent models were constantly revised and modified.</li> </ul>
<p><b>Transferability</b> Extent to which findings from one study in one context will apply to other contexts</p>	<ul style="list-style-type: none"> <li>• Theoretical sampling resulting in variance in terms of hierarchical and departmental structures of organizations.</li> <li>• Result: Model and propositions derived from reoccurring themes and with varied perspectives.</li> </ul>
<p><b>Dependability</b> Extent to which the findings are unique to time and place; the stability or consistency of explanations</p>	<ul style="list-style-type: none"> <li>• Various experiences with different contexts were utilized for the study.</li> <li>• Result: Consistency across the various experiences recounted by the participants.</li> </ul>
<p><b>Confirmability</b> Extent to which interpretations are the result of the participants and the phenomenon as opposed to researcher biases</p>	<ul style="list-style-type: none"> <li>• Different researchers independently reviewed interview documents.</li> <li>• Data collection procedures followed.</li> <li>• Result: Interpretations and results were refined.</li> </ul>
<p><b>Integrity</b> Extent to which interpretations are influenced by misinformation or evasions by participants</p>	<ul style="list-style-type: none"> <li>• Anonymity of participants guaranteed.</li> <li>• Interviews conducted in a non-threatening manner.</li> <li>• Result: Researchers have no reason to believe participants were evading issues/questions.</li> </ul>
<p><b>Fit</b> Extent to which findings fit with substantive areas under investigation</p>	<ul style="list-style-type: none"> <li>• The methods used to address credibility, dependability, and confirmability also resolve this issue.</li> <li>• Result: Rich interpretation of results and the complexities of the issue at hand uncovered by the data.</li> </ul>
<p><b>Understanding</b> Extend to which participants buy into results as possible representations of their worlds</p>	<ul style="list-style-type: none"> <li>• The participants confirmed the initial interpretations as representative of the reality.</li> <li>• Result: Interviewees and participants bought into the findings.</li> </ul>
<p><b>Generality</b> Extent to which findings discover multiple aspects of the phenomenon</p>	<ul style="list-style-type: none"> <li>• Interviews captured various facets of the phenomenon.</li> <li>• Results: Multiple aspects of the phenomenon were captured.</li> </ul>
<p><b>Control</b> Extent to which organizations can influence the aspects of theory</p>	<ul style="list-style-type: none"> <li>• Participants have some degree of control some variables within the proposed theory.</li> <li>• Result: Participants were involved in implementing sustainable practices within their network.</li> </ul>

## D. Findings

The actors involved in sustainability conversations were primarily from three different departmental teams: top management teams, SCM teams, and sustainability teams. Teams refer

to the functional responsibilities of the actor. Thus, individuals in the top management teams comprise of the executives who are the “strategic apex of an organization” (p.127 Finkelstein et al., 2009). Consistent with prior research, the SCM team included the operations and production management, logistics and transportation, and marketing departments (Mentzer et al., 2008). Top management teams are typically involved with the strategic activities, while the SCM team are involved with the operational activities. The sustainability teams may be internal, belonging to the sustainability departments within the organization, or external, such as NGOs, government agencies, etc. Depending on the organizational structure, one or more actors from each organization and often belonging to different teams are involved in the sustainability conversations. A relatively flat organization includes a fewer number of actors, but the one actor typically oversees the responsibilities of various departments. Table 1 summarizes the departmental team of the participant based on their functional responsibilities. Thus, while one interviewee reported that the organization had different departmental teams with a well-etched role, another remarked that the hierarchy was absent and sustainability communication involved the main managers or team leads whose rank were also equivalent to top management positions.

The analysis revealed that the voluntary involvement with SSCM practices is contingent on the business case of adopting the initiative. The next section outlines how the business case is communicated. After that, the findings are classified into three sections: highlighting the network factors, communication factors, and structural factors affecting SSCC.

### **Business case**

When informed by the downstream supply chain partner about an initiative, the key element in influencing the upstream actor to adopt a sustainability initiative is, as stated by Participant\_8, the value proposition for the actor. This value proposition defines the business

case or the impact on the operational activities for the actor. The communication of the value proposition can, in turn, be categorized into two categories, economic performance and risk mitigation. These categories capture the purpose of the initiative, as communicated by the actor in the downstream organization.

**Economic performance:** Sustainability initiatives have often been advantageous for organizations by directly impacting organizational profits positively, and/or by indirectly generating a competitive advantage (Flint & Golicic, 2009; Miles & Covin, 2000; Paulraj, 2013; York, 2009). Therefore, the most influential manner of persuading the focal actor to agree to participate in a sustainability initiative is by highlighting the gains from adopting the initiative. The direct benefits are stated as lowering costs or increasing revenues by charging higher prices for the sustainable goods/services. The framing of sustainability communication using this schema faces minimum resistance because it appeals to the focal actor due to the business case. As Participant\_1 remarked, "...the supplier is only going to make a change like that if they can get additional value out of the change, either a higher price or lower cost." Highlighting the economic benefits from an initiative, therefore, supports the impetus to SSCC. At a minimum, it is important to communicate that the focal actor's organization would not fare worse after implementation of the initiative. As Participant\_10 commented, "...we purchased the yard tractor because it performed as well as a diesel truck." Thus, the actor is ensured that sustainability does not come at the cost of economic profits. The economic performance category, therefore, aligns with the functional objectives of the node and results in the contagion of sustainability.

**Risk mitigation:** SSCM initiatives are also communicated as a risk mitigation strategy (Cousins et al., 2004; Hajmohammad & Vachon, 2015; Tay et al., 2015; Teuscher et al., 2006). Framing the initiative as a risk management strategy draws the actor's attention to the potential risk from not implementing the initiative. The data analysis also revealed different ways in which the business case for risk mitigation is presented.

One way to introduce the risk is by highlighting the damages of not satisfying the consumers. In this context, sustainability conversations could capture the consumer awareness and therefore fulfill customer expectations, while the other highlights the reputational gains from adopting the sustainability initiatives (Galbreth & Ghosh, 2012; Lourenco et al., 2014, Van Marrewijk, 2003). The communication then relies on leveraging the importance of the consumer, which presents a strong business case since the whole purpose of a supply chain is to fulfill the needs of the consumer (Mentzer et al., 2001). Furthermore, these risks should be communicated emphasizing the focal actor's risk, more than the risk for the communicator's organization. As Participant\_19 stated, "Well it obviously helps them in their (Suppliers) reputation." Sustainability manager, Participant 14, commented, "...big thing lately is millennial[s] are asking more and more for responsibly-sourced products." While there are mixed reports about consumers purchasing patterns based on environmental and social awareness, there is evidence of growing appreciation towards sustainability (Brockhaus et al., 2013; De Pelsmacker, et al., 2005; Hartmann & Moeller, 2014;). Proponents who view consumers as critical stakeholders whose needs should be managed by an organization also support this perspective (Foerstl et al., 2015; Gualandris et al., 2015). The communication also leverages the focal actor's motivation to work for their benefit and not the communicators' benefit. As Participant\_13 mentioned, "...it's our brand reputation with the consumer or with the

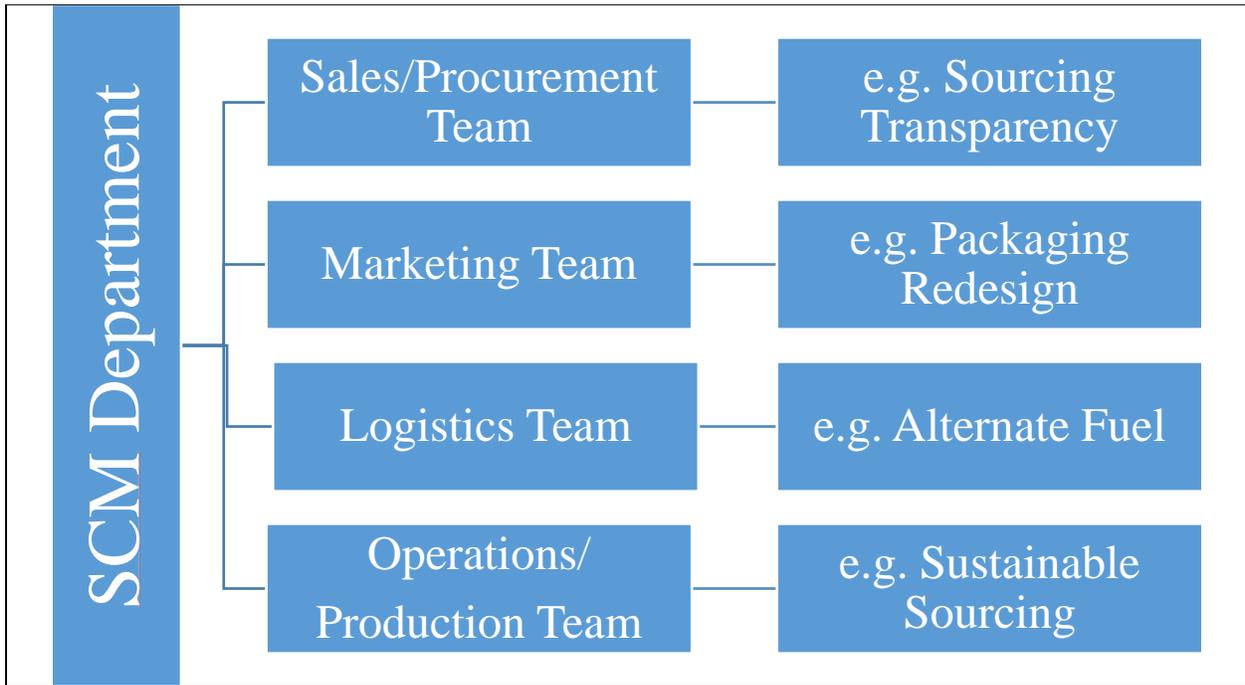
consuming public.” Thus, customer loyalty towards such companies and the backlash companies have had to face when their sustainability misgivings were out in the public, support this framing (Deegan & Shelly, 2014; Singh et al., 2012).

The business case for risk mitigation is also presented using the resource scarcity principle. The framing of sustainability initiatives using the resource scarcity idea engages the actors by highlighting the responsibility of SCM managers to ensure continued product supply, and thereby ensure that the consumers’ needs are met in the future (Bell et al., 2012; Tilton 1996). Often, this framing is contingent on the actor’s understanding of the long-term effects of their organizational decision-making. Emphasizing the long-term effects influences the actor by making him responsible not only to the consumers but also to the subsequent actors who will be taking over their positions in the future. As Participant\_14 inputs, “... you know by 2050 we're going to be 9.6 billion people in the world. We're going to have to be 70% more efficient on the land we already have in agricultural production. We have to use water much more efficiently. We're not going to be able to provide enough food for these people.”

Communicating the business case of risk mitigation might also involve focusing on the risk of failing to participate in a new and novel innovation. The focal actors’ resistance to an initiative is thereby lowered by highlighting their organization's important role in the development and generation of new ideas in this realm. The communication of these messages stresses the risk of being left out in generating new and innovative ideas to promote sustainability in the supply chains. These SSCM initiatives were the ones that had yet to be proven beneficial; therefore, the proposition was framed hinting the possibility to advance sustainability in the supply chain (Nair et al., 2016; Pagell & Wu, 2009). As Participant\_8 remarked, “Maybe it's going to lead to innovation...”

Interestingly, the business case is different as viewed through the eyes of various actors in the focal organization. This is especially true in the different SCM teams, since they often involve actors with various departmental functions. Figure 1 highlights the various teams and examples of sustainability initiatives that affect the team nested within an SCM node. In the interviews, it emerged that the interviewees viewed the sustainability initiative as worth implementing if it directly affected their work domain. The likelihood of contagion increases when the communication is framed to suit the organizational functionality of the actor. For instance, logistics personnel would reflect on the cost implications for reducing packaging, whereas marketing personnel would reflect on the implications of the brand image and the message it conveys to the consumers. Similar rationale suggests that a procurement manager will be swayed with conversations in which the business case utilizes the resource scarcity principle since it directly involves the actor's job functions. On the other hand, the business case for the sales personnel might be contingent on the increase in sales due to the growing popularity of sustainable products. These intricacies are important to consider while pitching a sustainability initiative. For instance, as Participant\_8 mentioned, "... the marketing and commercial benefits internally in addition to the social impact" is relevant to the marketing personnel. Thus, while a consumer reputation risk related framing would work well with a marketing executive, the same proposition, if possible, should be presented with a risk from the resource scarcity perspective to the logistics personnel.

**Figure 1:** Role alignment and projects of interest to teams within the SCM department



Consistent with the literature, one of the biggest challenges that interviewees stated is that they now have to try and implement solutions to complex problems since the most profitable ideas have already been implemented (Abbasi & Nilsson, 2012; Metcalf & Benn, 2013). As Participant\_11 put it succinctly, “Most of the low-hanging fruit's gone. We're not talking about changing out light bulbs anymore. We're not talking about energy efficiency. Things that can immediately impact your bottom line, those things have been done by and large. We're talking about really difficult paths and long term projects around very complex supply chains.”

Complexity makes it difficult to focus on the long-term gains over short-term losses because of unpredictability (Besiou & Wassenhove, 2015) Thus, complexity undermines the business case during the sustainability conversations. The various tradeoffs involved in the decision-making process make the choices difficult for the decision-maker and ultimately dampen the SSCC phenomenon by making the decision-makers question the value proposition of an initiative. In

recent times, the complex nature of the initiatives lower the value proposition for the ego, and this in turn negatively influences the contagion of sustainability.

**Proposition 1:** The business case for the sustainability initiative is positively related to communicating the gains from the initiative as per the departmental involvement of the focal actor.

**Proposition 2:** The business case for the sustainability initiative is negatively related to communicating the complexity of implementation the initiative for the focal actor.

Therefore, during sustainability conversations while highlighting the complexity of the tasks diminishes the business case, highlighting the gains as related to the departmental function of the focal actor enhances the value propositions. The SSCM initiatives, which present a strong business case for the focal actor, face minimum resistance. Data analysis also revealed factors that influence a focal actor when the communicating actors perceived low business case for a departmental actor. These are summarized in the following sections.

### **Network factors**

The interview analysis led us to the network contagion model proposed by Burt (1987). The previous section outlined the different departmental actors involved in the decision-making process. These departmental actors represent the various nodes in the supply chain network that must function and coordinate to implement an initiative (Borgatti & Foster, 2003; Borgatti & Li, 2009). Consistent with the connectionist view of network theory, the ties between the actors serve as communication and information conduits and subsequently affect decision-making, which impacts the performance and organizational innovation (Baron & Markman, 2000; Carnovale & Yeniturt; 2015). The focal actor in this study is synonymous with the concept of

ego in network theory. The various actors communicating with the focal actor are known as alters (Borgatti & Foster, 2003; Borgatti & Li, 2009). Amongst all the actors that have ties with the focal actor, this study focuses on the alter that proposes an SSCM initiative to the focal actor.

**Models of contagion:** Constant comparative data analysis or the comparison of the interviews with the newly conducted interviews shed light on the models for SSCC (Glaser & Strauss, 1967). The manner in which sustainability activities are voluntarily assimilated into supply chains is similar to the contagion model proposed by Burt (1987). Recall that as a result of sustainability conversations, a major factor to implement sustainability practices is the business case. But, the social networks determine the manner in which the sustainability initiative is introduced to the focal actor's organization (supplier) and subsequently into the supply chain network. The two contagion models, cohesion model and structural equivalence model, differ in the proposed pathways and mechanism for the voluntary SSCC phenomenon.

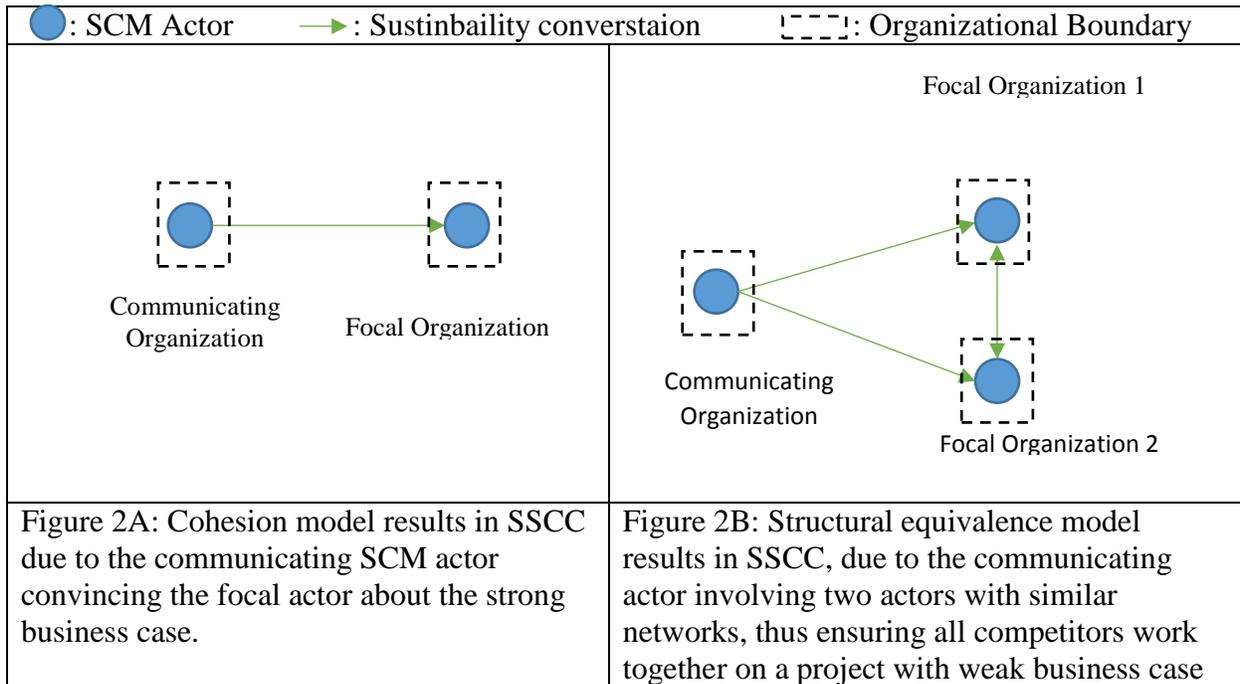
The cohesion model proposes the focal actors increased affinity to adopt a sustainability project is based on the business case of the initiative as communicated by the downstream organization. Thus, cohesion can lead to the successful contagion of sustainability as long as the business case is well articulated. Furthermore, a strong business case can result in successive contagion across supply chain tiers as the business case typically benefits all members of the supply chain. Under the cohesion model, an initiative with a high business case is recognized as impactful and is more readily given a nod of approval by the focal actor. Moreover, when the focal actors' organization becomes a proponent for the initiative, their upstream organizations might also accept the initiative due to the business case, resulting in SSCC propagation across supply chain echelons.

However, when the social or environmental case outweighs the business case, i.e. the business case is weak; the structural equivalence model works better. Structural equivalence implies that two nodes in a network have similar ties to other members in the network (Borgatti & Li, 2009). The structural equivalence model posits that the focal actor's decision to implement a sustainability initiative is an outcome of acting in a manner similar to others who have the same structural network. In other words, the focal actor has a greater likelihood of accepting the initiative if another actor in another supplier organization with a similar network, accepts the initiative. Often the failure of the cohesion model is due to the absence of a strong business case. This is because the SSCM initiative while beneficial for the environmental and/or the social case, impacts the focal actor's departmental function in a manner such that it loses on the economic front to its competitors. The structural equivalence model ensures that the focal actor's organization does not lose competitive ground to their rivals by working on an SSCM initiative with a weak business case. It relies on maintaining the competition between the focal actor's organization and their competitors (between suppliers), who have similar structural networks, by working together to benefit sustainability. An illustration that Participant\_9 referred to was the collusion of detergent companies and the retailers to provide sustainable products. Since consumers perceived concentrated detergents as inferior quality for multiple reasons including smaller package sizes, detergent suppliers worked together to level the playing field in order to enhance sustainability while maintaining the industry competitiveness. Consequently, all agreed to voluntarily collaborate to have only concentrated detergents on the shelves so consumers could not be biased based on the quantity and size of the product. The business case was the lowered logistics costs, freed shelf space, etc. due to smaller detergent packages. The structural equivalence model uses collusion to attain a greater sustainable goal without being inadvertently

penalized for sustainable actions. Figure 2A and 2B outline the cohesion and structural equivalence model considering only the SCM actors.

**Proposition 3:** When the business case is low, the structural equivalence model, as opposed to the cohesion model, is positively related to sustainable supply chain contagion.

**Figure 2:** Cohesion versus Structural Equivalence model of sustainable supply chain contagion



**Sustainability teams:** When present in the communication network, sustainability teams were found to play a major role in SSCC phenomenon. The primary communication flow between the SCM and top management nodes is related to business or operations. Even when sustainability-related communication flows among these actors' nodes, the priority is always the business communication. The ties with sustainability teams, however, ensure sustainability conversations, since they pertain directly to the job functions of the sustainability teams.

Sustainability teams can be internal, belonging to the organization, or external, belonging to NGO's, trade unions, etc. In the organizations we interviewed, the internal sustainability teams played many roles. The teams could be tasked with sustainability for internal operations and/or external operations as well as evaluating the financial benefits. They were involved with specific problems in areas such as logistics (e.g. alternate fuels, efficient transport, repackaging) and procurement (e.g. social and environmentally responsible sourcing). Therefore the internal sustainability teams were responsible for evaluating the sustainability impact from the internal and/or external operations. External sustainability teams, such as NGOs and agencies, played a similar role to the internal sustainability teams by ensuring that the sustainability conversations remained entwined with the business communication. Often they specialized in assessing how SSCM initiatives could be assimilated into the operational activities.

Internal sustainability teams are tasked with ensuring that they not only draw attention to sustainability issues but also present in it in a manner such that the business case is clearly articulated. Having sustainability teams involved allows the SCM and top-management actors to evaluate the business case without taking out time from their schedule to investigate sustainability concerns. The internal sustainability teams are therefore a resource for the implementation of SSCM initiatives and the subsequent SSCC. One of the members of the internal sustainability team, Participant\_11 commented, “they [buyers] don’t have to try to be the expert. I’m that expert.” Depending on whether the sustainability team member was part of the communicating organization or the focal organization, they helped in developing the business case for the focal actor or evaluated the sustainable impact of the initiative.

External sustainability teams, NGOs, and sustainable agencies are representatives for both the environmental and social stakeholders (Hyatt & Johnson, 2016; Montabon et al., 2016;

Saunders et al., 2017; Utting, 2009). They also facilitate the operations between various organizations to achieve operational goals (Hyatt & Johnson, 2016; Montabon et al., 2016; Saunders et al., 2017; Utting, 2009). While the external sustainability teams can be part of the cohesion model of contagion, they play a major role in the structural equivalence model of contagion. The members from the external agencies are the unbiased mediators in the exchange of communication (Hyatt & Johnson, 2016). These members from these organizations help to create and communicate a uniform voluntary code of sustainable action in their respective industries. Two such agencies, named during the interviews, are the Clean Cargo Working Group (marine sector) and the United States Environmental Protection Agency (EPA). The Clean Cargo Working Group is a non-profit organization comprised of companies that work together while the U.S. EPA runs many programs to benefit the sustainability standards. The external sustainability teams ensure that all members have similar standards for sustainability by ensuring consistency in the set of initiatives to be adopted, maintaining consistency in terms of the investments from all the actors with similar structural networks. These external actors then facilitate the structural equivalence contagion by providing information on the hotspots and citing guidelines to implement an initiative. Participant\_21, a member of an internal sustainability team, mentions the benefits of working with external members as, "...you kind of get first-hand information from different industry groups, and that for me is invaluable."

The sustainability teams are, therefore akin to, the structural holes within the network that introduce novel and relevant sustainability information into the communication networks, without necessarily being privy to the operations (internal) communication (Autry & Griffis, 2008; Burt, 2009; 2004). The number and dispersion of the sustainability teams in a network vary. On the one hand, the focal and communicating organizations might both have sustainability

departments as well as be working with an external sustainability team. On the other hand, there are also cases where there are no sustainability teams included in the sustainability conversations. In such situations, SCM nodes are tasked with evaluating both the efficient and the operational aspects, as opposed to other counterparts who had the benefit of using the expertise of the sustainability teams. As a result, business communication took precedence over the sustainability conversation, especially when SSCM initiatives with a weak business case are considered. Thus, the number of sustainability teams resulted in the detailed evaluation of the business case, since the sustainability team strived to accentuate the value proposition for the business nodes.

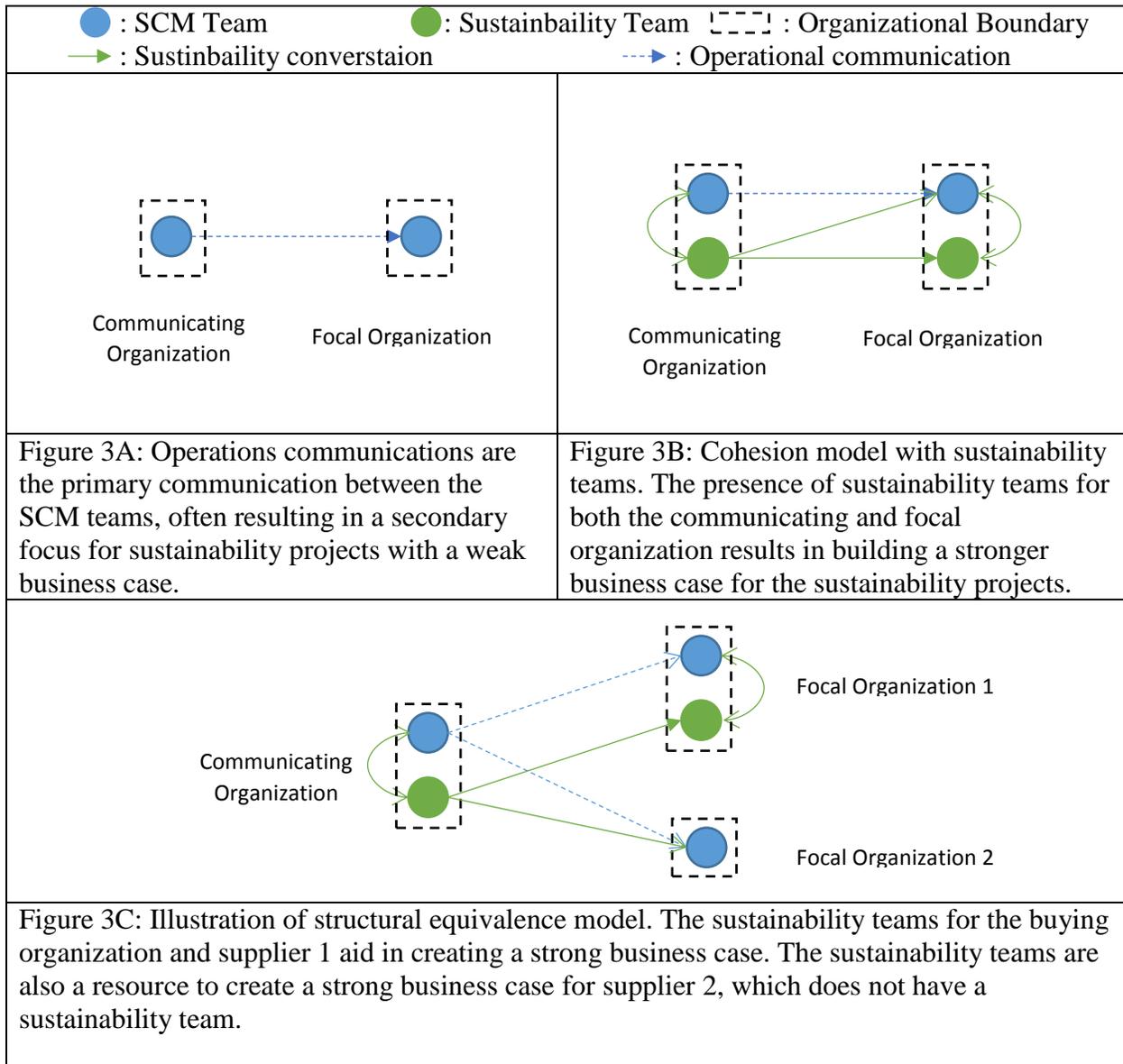
However, sustainability teams by themselves cannot make the decision to adopt an initiative. The communication network is made up of actors in many departments and the request to adopt an initiative may be relayed to an actor in the top management, SCM, or sustainability team in the focal organization by an actor with similar or dissimilar departmental functions in the downstream organization. As such operational decision-making typically rests with the top management or SCM teams, the SSCC was more likely when the business case is presented to an actor within these departments. Therefore, even when the sustainability teams were involved, the most efficient communication path included the business nodes. As Participant\_4, a member of a sustainability team commented, "... if I said "hey we need you to start this program. It's good for the environment. It's good for your business." They'd (supplier) just be like "knock it off." But if one of my buyers from any category sent out that e-mail and made it even shorter somewhat we'd be at the next step." Participant\_17, one of the supplier sustainability teams, also echoed the same sentiments, "they (buyers/buyers sustainability teams) put a lot of their ideas to me at my level..... And that's probably not the best location. The best location is to pitch it .....either at the

executive level..... their sales organization.” Involving the business nodes therefore facilitated in the supplier adoption of sustainability. The communication pathway in companies with sustainability teams involved two main channels. In the indirect pathway, the actors in the sustainability teams of the downstream organization had to convince the sustainability team of the focal organization, who in turn relayed the business case to their SCM and/or top management members. In the direct pathway, the sustainability teams in the downstream organization communicated with the SCM and/or the top management teams of the focal organization. Either way, it was the SCM teams and/or the top management teams that made the decisions to adopt an initiative if it impacted business. Therefore, while it is beneficial to have sustainability teams, it is important to involve the actors involved in business decision-making in the communication. Figure 3A, 3B, and, 3C highlight how internal and external sustainability teams ensure sustainability conversations are included in the business communication.

**Proposition 4:** When the business case is weak, the presence and number of sustainability teams in the communication network are positively related to sustainable supply chain contagion.

**Proposition 5:** Utilizing the business communication channel, even when the sustainability teams are present in the network, is positively related to sustainable supply chain contagion.

**Figure 3:** Internal sustainability teams adding in the sustainable supply chain contagion



**Pathway of communication within the focal organization:** Recall, that the focal organization is informed of the SSCM initiative via actors with different departmental roles, i.e. at the top management, SCM and/or sustainability node. Depending on the point of the first contact, the SSCC process then takes the form of a bottom-up or top-down approach in the focal organization. Participant\_8 highlighted a top-down approach, “The request for sustainability would have come to some sort of senior person in the organization, for instance. It would have

cascaded down into mostly the supply chain and logistics team.” But another buyer, Participant\_7, remarked on the bottom-up nature of the initiatives, “these (sustainability initiatives) are things that I’m driving, or my outsource team is driving.” The interviews revealed that there was no single fixed bottom-up or top-down approach within the organization. But utilizing authoritative power (Top-down approach) facilitated in the acceleration of sustainable supply chain contagion (Walls & Berrone, 2015). As Participant\_7 continued, “Sometimes you may have to enlist your boss, or you’ll have to reach out to senior leadership at somewhere.” Because of the hierarchy, some respondents claimed the SSCC was most rapid when the initiative was implemented in a top-down manner, in the focal organization, such that the top management informed the SCM team about the intention to adopt the initiative.

Similar to previous literature, in our interviews, strategic and operational initiatives emerged as two types of activities that supply chain managers desired to assimilate into their supply chains (Handfield et al., 2005; Tate et al., 2013). The operational activities were the ones that directly impacted the day-to-day operations of the SCM professionals and were within the direct purview of the SCM managers. A strategic initiative typically requires more investments and has a more long-term goal than an operational initiative, and is better communicated to the top managers who then pass it on the supply chain managers. For instance, a strategic operation that we came across in our interviews, and highlighted in past literature, is the sustainable sourcing due to deforestation issues associated with palm oil (Kalfagianni, 2014; Peters et al., 2011). Some of the operational issues that directly impact the organizations are implementing supplier supply chain assessment tools and packaging reduction (Dangelico & Pujari, 2010; Gimenez & Tachizawa, 2012). The companies that had a relatively flat organization did not come

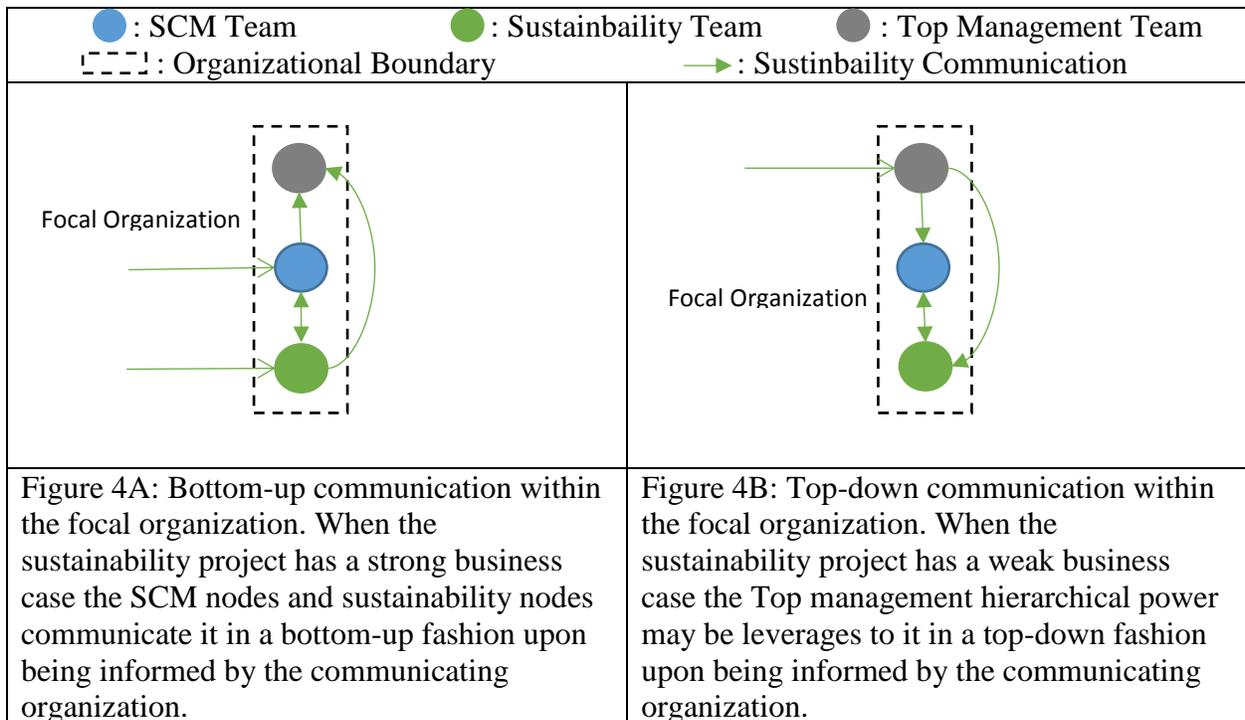
across these issues. Figure 5A and 5B illustrate a bottom-up and top-down cohesion model respectively.

**Proposition 6:** When the value proposition is low, top-down communication approach is positively related to sustainable supply chain contagion.

**Proposition 7:** Strategic sustainability initiatives versus operational sustainability initiatives are better communicated into the focal node in a top-down manner to result in a faster sustainable supply chain contagion.

Figures 4A and 4B reflect the cohesion bottom-up model, and structural equivalence top down model with all the departmental members Figure 5 presents a model for the structural equivalence model.

**Figure 4:** Bottom-up and Top-down communication in focal organization



**Node Distance:** The length of the supply chain networks vary by the type of product in question,

depending on the number of tiers of suppliers. In the interviews and consistent with the network theory paradigm, it emerged that the communicating organization's influence on the focal organization is negatively related to the number of tiers between the organizations (Freeman, 1978). As Participant\_17 pointed out, "I think we've been reasonably successful where we have a direct relationship...where we buy indirectly through aggregators, so think of where co-ops or through companies we've had, you know a much greater challenge." This also highlights the issues with transparency since there needs to be considerable supply chain investments for monitoring and controlling to overcome the transparency issue (Carter & Rogers, 2008). Thus, the length of the communication network affects the sustainability intentions. The increased distance requires increased efforts to influence the suppliers (Awayseh & Klassen, 2010). Particularly, when the business case is weak, the focal organization is reluctant to adopt an initiative that needs them to convince their downstream members. Therefore, the contagion is diminished due to the need to persuade multiple tiers to work on an initiative that does not have a strong business case.

***Proposition 8:*** When the business case is low, node distance is negatively related to sustainable supply chain contagion

### **Communication factors**

**Description of initiative:** The data analysis revealed that actors focused on two different aspects of the SSCM initiative, which subsequently influenced the focal actors intention to adopt an initiative. On one hand, the communication could state "how" the focal organization can make the change happen and thereby recount "how" the initiative should be adopted. On the other hand, the communication from the downstream actor could revolve around "why" the SSCM initiative needed to be adopted. In our interviews, it emerged that in cases when the business case

was weak, communication should focus on how the focal organization can go about implementing the initiative.

These findings were consistent with the studies involving construal level theory (Liberman et al., 2002; Liberman & Trope, 1998). According to the theory, human decision-making is based on abstract reasoning or concrete reasoning approach. The abstract reasoning approach focuses on the broader strategic goals, while the concrete reasoning approach focuses on the functional and task-oriented goals (Cantor & Macdonald, 2009). In our interviews, it was revealed that in instances when the business case is weak, communication should be more concrete and focus on how the focal organization can go about implementing the initiative. When the business case is strong, abstract reasoning approach will justify the implementation of the initiative. Because of the strong business case, the focal actors will consider it worthwhile enough to devise an implementation plan. However, when the business case is weak, the SCM and Top-management teams would rather invest their time in more fruitful ventures and other departmental tasks. In such situations, utilizing the concrete reasoning approach and presenting an outline of the steps to implement the plans has a greater chance of success since they do not have to take away time to devise an implementation plan. As Participant\_5 pointed out, "... it would be easier to go and make that presentation to the suppliers, bring them all in the room and say-look we've done this. This is what came out of it. This is where the issues are. This is where-how you relate to those issues and we need your help." According to the theory, concrete thinking resolves the immediate problems, thus concrete descriptions would lead to feasible changes that the operational nodes may implement to achieve a sustainability goal.

**Proposition 9:** When the business case is low, concrete reasoning approach as opposed to abstract reasoning approach is more likely to result in sustainable supply chain contagion.

**Consistency:** Another important factor that influenced the supplier willingness to adopt an initiative was the consistency of the demands. When the communicating actors were not consistent, the focal actors claimed that the supply chain partners' previous requests for adoption did not have follow-ups or were initiatives that were later dropped. As a result, the focal actors wasted resources in implementing an initiative that was later not part of the conversation. Consistency therefore implies focusing on few important hotspots and ensuring that they are adopted by the ego, as opposed to losing interest in a hotspot and asking the ego to work on a different hotspot. Key reasons, which was pointed out by sustainability manager Participant\_11, were that the individuals keep rotating within the communicating organizations, thus a new manager may not be willing to take on the initiative started by his predecessor. "... we have a culture where people tend to move desks every 18 months to a couple of years and when new people come in they have new ideas." This idea was echoed by one of their suppliers, Participant\_17, who stated that the demands do not live beyond the individuals, "...what's not unusual for us to see is buyers move or evolve and change roles." As a result of this inconsistency in terms of demands, the supplier's willingness to adopt an initiative is considerably decreased. This is particularly true when the business case is weak, the actors will be reluctant to work on a project that might have been initiated by their predecessors.

**Proposition 10:** When the business case is low, consistency of proposed initiatives is positively related to sustainable supply chain contagion.

### **Structural factors**

**Power:** Consistent with prior research, the power of the communicating organization affected the focal actors' decision to implement the initiative (Clifton & Amran, 2010; Crook & Combs, 2007; Pilbeam et al., 2012). Participant\_8 revealed their experience as, "Essentially what they

did, and they did this to all suppliers, is they flexed their empowerment.” While literature has acknowledged the use of power for mandated sustainability activities, in our interviews it emerged that power can also be used to influence suppliers to take on activities voluntarily (Brockhaus et al., 2013). Power can be utilized to control the behavior of an individual or a group (Hunt & Nevin, 1974). Some of the interviewees from organizations that communicated the initiatives even acknowledged that it was their position in the network that facilitated the adoption of sustainability initiatives by their supplier. As Participant\_14 remarked, “The real reason that suppliers do things is because they want to maintain a business relationship with us.” Thus, the power of the downstream member influences the ego to adopt the initiative when the business case is weak. Another manner of utilizing power would be via the use of awards that affect the economic baseline (Hunt & Nevin, 1974). These could be by activities such as promising bigger contracts or some additional benefit, such as increased shelf space. For instance, Participant\_12 mentioned, “And if you are taking those into your own sustainability program, then we're going to reward that by increased visibility on our website. With either a special logo, or maybe special search feature.” This manner of utilizing power is effective because incentives not only impact the costs directly, but also minimize future possibilities of supplier offense (Proteous et al., 2015).

**Proposition 11:** When the business case is low, the power of the communicating organization over the focal firm is positively related to sustainable supply chain contagion.

**Collaboration:** The interviews highlighted collaboration between the communicating organization and focal organization aided in the contagion of sustainability. As Participant\_21 stated, “...if someone came to us and said, “Let's, partner. Let's work together.” That would be a good thing.” Working directly with the supply chain partners in trying to develop and implement

a sustainable initiative helps on overcoming the supplier's resistance to an initiative (Carter & Carter, 1998; Gimenez & Sierra, 2012; Vachon & Klassen, 2008; Zhu & Sarkis, 2004).

Cooperation with the suppliers has also been found to be beneficial to the organization's profitability (Hollos et al., 2011). Collaboration can also be in the form of educating and training the suppliers. Educating and working with the suppliers helps in overcoming barriers since in many cases the vendors may be unaware that a problem exists. Participant\_14 commented, "A lot of people have trouble associating a box of cereal to like dead zones in the Gulf of Mexico, right? It's hard for people to conceptualize." Supplier training and working as partners has been found to influence the supplier to adopt a sustainability initiative (Zhu & Sarkis, 2004).

Interviewees also highlighted how collaboration resulted in trust and long term relationships all of which favor the contagion of sustainability when asked by a buyer. Participant \_8 mentioned, "The people who collaborate with the suppliers and the customers and even with their competitors may end up in a long-term favored position," Participant\_8 stated, "If they (suppliers) don't trust you and you have a lousy relationship, they're generally not that engaged in doing what you ask."

**Proposition 12:** When the business case is low, collaboration among the communicating organization and the focal organization is positively related to sustainable supply chain contagion.

**Organizational sustainability orientation:** Consistent with prior literature, the focal organization's organizational sustainability orientation influenced the adoption of sustainability (Besjke & Seuring, 2014; Pagell & Wu, 2009). Organizational sustainable orientation will result in the actors working in the focal organization to be more pro-active and amenable in getting involved with sustainable initiatives (Wu & Pagell, 2011). Therefore, the individuals within such

organizations will need less convincing to adopt a sustainability initiative since the organizational values foster and nurture sustainable decision-making. Moreover, a sustainable organization will provide sufficient autonomy to its managers to adopt an initiative without dampening the impetus to the contagion (Wu and Pagell, 2011). Also, if the focal organization is sustainability-oriented, there is a greater likelihood that they are already working on the problems that are of interest to their downstream members. The organizational orientation amplifies or dampens the motivation to work on a sustainability initiative. With a sustainable orientation organization it is considerably easier to redesign their resources in a manner suitable to solve problems. Egos in such nodes will also face lower resistance from other individuals. As Participant\_14 mentioned, "... another reason suppliers sometimes won't do sustainability issues due to internal bureaucracy challenges." Thus, even though the results are motivated, sometimes it might be difficult for them to overcome the organizational barriers and implement an initiative. Organizational support to environmental activities has been found to be positively associated with the likelihood of adopting an initiative (Cantor et al., 2013). Therefore, when the business case is low, sustainability orientation of the ego will assist in the contagion of sustainability.

**Proposition 13:** When the business case is low, organizational sustainability orientation of the focal organization is positively related to sustainable supply chain contagion.

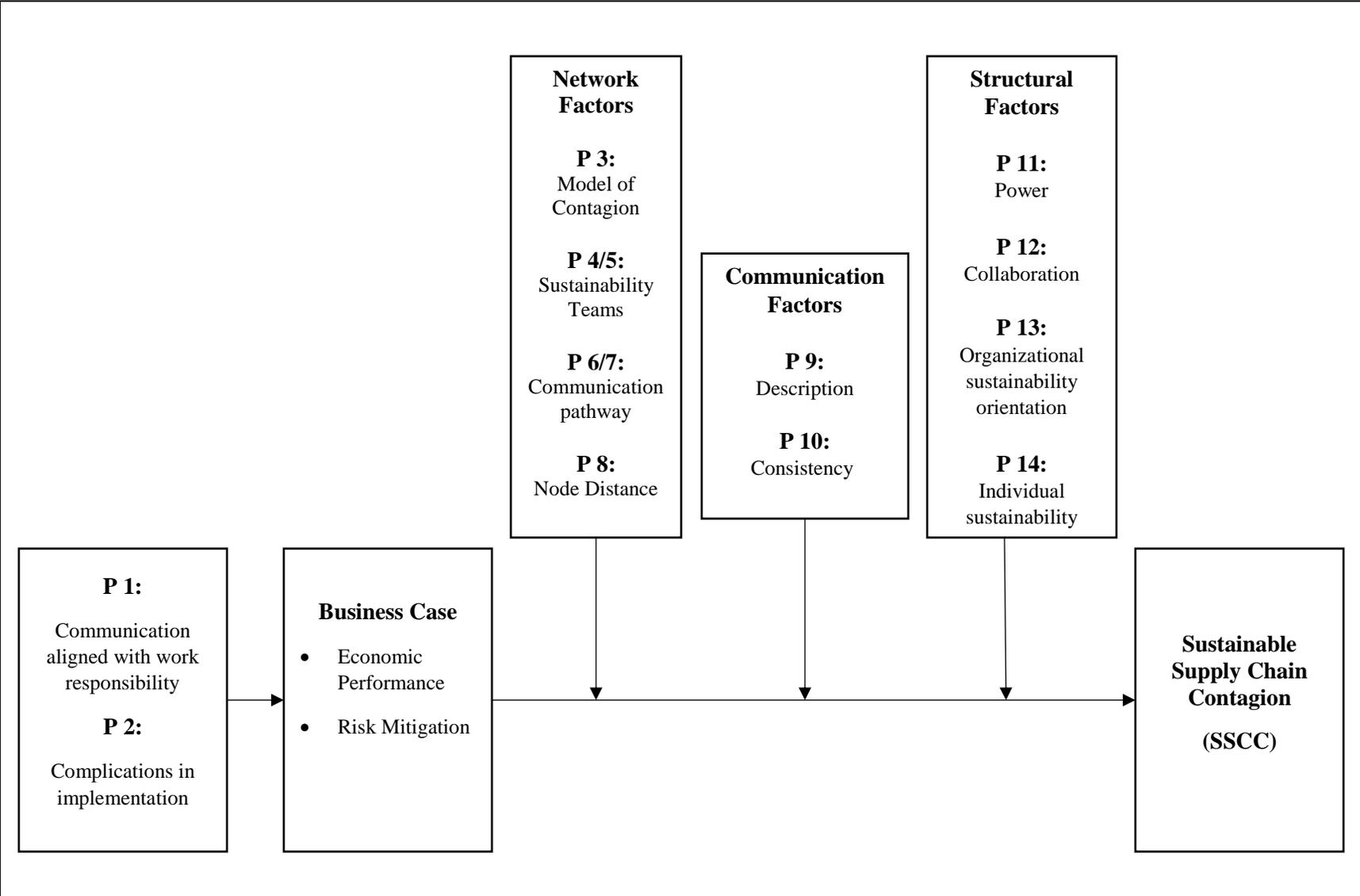
**Individual disposition towards sustainability:** Finally, one key determinant to the contagion of sustainability is the individual disposition towards sustainability. Typically the interviewees had a pro-sustainability mindset since they agreed to be interviewed by us. But, they did recount instances of the issues they had to face both within an organization and from their suppliers because of the individual orientation towards sustainability. As Participant\_11 stated, "... you find some buyers that are just personally passionate about sustainability, and they become

champions, and they get so much done. And then there are other buyers who say “hey, I've got a day job. I'm as busy as I can be” or “you know the prices, you know, are through the roof for food right now especially in the protein categories you know. How could you possibly ask us to do anything more?” So you get kind of the full spectrum of responses.” While Participant\_11 worked for the communicating organization, individuals in focal organization exhibited similar accounts and instances. Previous studies have developed profiles of managers and the sustainability decision-making process (Kirchoff et al., 2015; Signori et al. 2015; Thomas & Lamm, 2012). When it comes to acceptance of sustainability in organizational decision-making based on individual motivation, our research suggests that decision-makers can be active in pursuing pro-sustainable behavior, or they can be annoyed at having to work towards sustainability goals especially when there is no added incentive for them. Finally, there are the agnostic workers who have no real affinity towards sustainability but take it on as a work description. This categorization of individuals exhibits the person's motivation to work on a sustainability initiative. The annoyed and agnostic managers would base the decisions on the value proposition, since a higher value proposition would make the initiative more aligned with the function. The active regarding decision-makers would strive to assimilate the sustainability initiatives within the supply chain even when the value proposition is weak. The organizational orientation is necessary for the agnostic individual since that provides them the motivation to adopt an initiative.

**Proposition 14:** When the business case is low, individual sustainability orientation of the actors is positively related to sustainable supply chain contagion.

Figure 5 outlines the model for the SSCC phenomenon. Appendix H includes illustrative quotes from the interviews supporting the different categories outlined in the model.

**Figure 5:** Model of sustainable supply chain contagion



## **E. Discussion**

This objective of this study was to outline the communication network and the factors thereof that influence upstream supply chain professionals, when asked by a downstream member, to voluntarily work on a sustainability initiative. The subsequent adoption of the initiatives into the focal firm's supply chain is termed SSCC. Moreover, when the focal organization turns into a communicator organization and establishes sustainability conversations with their upstream partners, the SSCC phenomenon encompasses more echelons in the supply chain. Consistent with previous studies, the interviews conducted to investigate the phenomenon, revealed how the business case for the SSCM initiatives influences the decision-making process (Carter & Rogers, 2008; Schreck, 2011). The implementation of a sustainability initiative is, therefore, quite similar to an operational initiative implemented after evaluating the trade-offs. The findings from the data analysis have several implications, outlined in the next sections, for both theory and practice.

### **Theoretical implications**

This study makes several theoretical contributions by investigating the B2B communication resulting in the adoption of a sustainability initiative. First, it highlights the complex communication network that spans multiple organizations and the various actors, each from different departments and with different departmental functions, embedded in the network. Communication is not simply about the transfer of information; it is also about how communication drives change (Cornelissen et al., 2015). The literature has focused on the impact of communication of corporate sustainability on consumer perceptions of the organization, but the efficacy of communication to influence supply chain partners has been overlooked (Parguel et al., 2011, Singh et al., 2008). Therefore, the study promotes a greater understanding of the

SSCC phenomenon by highlighting the persuasive power of communication. The SSCC model presented in Figure 6, contributes to theory by proposing how sustainability conversations influence an upstream members adoption intentions.

Second, the findings highlight the efficacy of framing in the context of sustainability conversations. Framing is the accentuating of particular issues in communication so as to increase the saliency and thereby ensure that the recipient's willingness to follow through with the recommendations (Entman, 1993). Sensemaking is the process of the actor's evaluation to understand the situation and develop their stance towards a position based on their comprehension of the situation (Weick 1995). Framing presents the information to the actor, and subsequently, the actors utilize sensemaking to make sense of the situation and come to a conclusion (Fiss & Hirsch, 2005). Highlighting the business case for the SCM professional aligns with the notion of framing the communication to pique the interest, and thereby influence the actor to work on an issue. Interestingly, this finding highlights the myopic tendency of managers in failing to comprehend the aggregate benefits to the organization. The study reveals a managerial propensity to often evaluate the departmental benefit over organizational benefits. Organizational decision-making has been found to be subjected to myopic tendencies by failing to consider the future consequences (Levinthal & March, 1993). This study extends the scope of studies evaluating managerial biases by proposing the tendency of managers to evaluate sustainable projects by considering the departmental implications without comprehending the broader organizational implications. While the literature has often highlighted the organizational benefits of SSCM initiatives, the findings from this study indicate that SSCC contagion is contingent on the SCM professionals' perception of departmental benefits from the SSCM initiative (Lopez et al., 2007; Montabon et al., 2007). As each SCM actor evaluates the tradeoffs

involved in accepting the SSCM initiative they have different goals that they strive to achieve. Successful SSCC is ensured when the communication aligns the business case with the departmental functions of the actor by lowering the actors' resistance to the initiative. Thus, a sales person would be interested in how the initiative might help in increasing sales by promoting it as a sustainable product, while a logistics personnel might be interested in the packaging efficiencies for the same SSCM practice. This study, therefore, poses a theoretical contribution by illustrating the myopic tendencies of an actor by prioritizing the departmental benefits over organizational benefits.

Third, it illustrates a multi-level model, which establishes the importance of the SCM professional being the agent for the SSCC. This model is consistent with the notion that organizational change is a multi-level phenomenon with the professional's decision-making being fundamental to the change process (Meyer & Goes, 1988; Smets et al., 2012). While the departmental business case is paramount in the focal actor's decision to adopt an initiative, the study illustrates several theoretical factors that aid in ensuring a successful SSCC. At the network level, the models of contagion, the role of sustainability teams as structural holes, the utilization of a top-down approach, and the proximity to the focal actors are all consistent with the network paradigm (Borgatti & Li, 2009; Burt, 2009). The SSCC model therefore successfully integrates the theoretical concepts to develop a greater understanding of the proliferation of SSCM initiatives. The communication factors identified in the model are consistent with the findings of construal level theory (Liberman et al., 2002; Liberman & Trope, 1998). This finding contributes to theory by providing insights as to how the sensemaking process is affected by the problem-solving approach. Specifically, the concrete problem-solving approach is more

beneficial to influence the focal actor's affinity towards a project by providing a well-defined action plan.

Finally, at the structural level, the model identifies factors that affect the SSCC phenomenon. While power and collaboration as governance tactics were both found to be influential, previous studies suggest that collaboration with the focal organization poses an added advantage since it provides a positive signal to the focal actor that the communicating actor's organization is also vested in the SSCM proposal and the initiatives will not be a one-time request that might be dropped later. Similarly, communicating to actors with a sustainability orientation or within organizations with a sustainability orientation promotes the likelihood of SSCC. Therefore, entire model is testable and provides insights not only into the importance of corporate communication but also into higher level factors that affect the efficacy of the communication to encourage change in the partner organizations supply chain.

### **Practical Implications**

The research endeavor provided insights which will prove beneficial to the communicating firms, especially since the literature has established that the first tier supplier in multi-tier supply chains is often responsible for communicating the importance of SSCM initiatives to the higher level suppliers (Wilhelm et al., 2016). First, the study highlights the importance of including actors from several upstream organizations into the sustainability conversations. This inclusion results in SSCC due to the structural equivalence model. The effectiveness of this strategy lies in the fact that it does not burden one focal organization with the unwanted costs of aiding in promoting social and/or environmental sustainability at the costs of financial sustainability. Since all the downstream members are inducted into the conversations they are more willing to trade off some of the financial implications as long as all the

competitors are affected in a similar fashion. Thus, including competitors in sustainability conversations results in a win-win situation for all involved.

Second, sustainability teams, both internal and external, were found to greatly influence SSCC by ensuring that the communication network focused on the sustainability issues. They assisted the SSCC phenomenon by ensuring that the actors in the SCM and top management nodes received relevant information without having to take out time from their routine work. This ensured that while the SCM and top management actors made SSCM decisions, they had access to pertinent information for informed decision-making. Moreover, in many instances the sustainability teams were advocates of sustainability and helped to make a business case around a sustainability initiative. While the role of external sustainability teams has been studied in the literature, this study found important implications of the role of internal sustainability teams. (Arenas et al., 2009; Egels-Zanden & Hyllman, 2006). Specifically, this study calls for internal sustainability teams to be recognized as part of the SCM teams. This is because in the interviews, it emerged that the internal sustainability teams played a big role in deciding whether the sustainability projects were worth implementing, by evaluating the business implications of the SSCM initiative. Internal sustainability teams are often important to ensure that the SCM and top-management actors in the communicating organization realize the importance of SSCM initiatives and thereby act as advocates of these initiatives. Sustainability teams in the focal organizations also played a similar role in ensuring that the business actors comprehended the business case for the initiative. Thus, their role was important to both intra as well as inter-organizational communication.

Third, the analysis also highlighted the importance of creating sustainability communication networks that involved top management teams. Today's businesses are creating

top management positions overseeing the sustainable operations (Strand, 2013). As a result of hierarchical power, the top management teams are often better suited to adopt initiatives because they can perceive the organizational benefits and can therefore evaluate the organizational business case over the departmental business case (Zwetsloot, 2003). Thus, when the business case was weak, top-down communication was more effective in SSCC to convince the SCM departments to work the initiative. Moreover, the top-management teams were easily influenced when the sustainability projects aligned with the strategic initiatives. In this case, the SSCM initiative could be positioned as aligned with the strategic objectives, and thus frame the issue as integral to their responsibilities.

Fourth, the findings illustrate when communicating organizations should include what the focal actors would like to hear. In this context, they should know the audience that they will be communicating to and thereby ensure that they frame the benefits of the SSCM initiative by aligning the departmental responsibilities of the audience. Also, instead of promoting the importance of sustainability, communicating organizations would be more persuasive when they have a tangible action plan for the focal actor's organization. In other words, the communicating actors are more influential when they can provide insights as to how the focal organization can go about implementing a project. By so doing, the focal actor is presented with a plan of action and, does not have to figure out the steps required to implement the project, which might be the case with SSCM initiatives with a weak business case. The finding also suggests that communicating organizations ensure that the SCM actors hand over the projects that they are working on to the actors taking over their positions. One solution to avoid confusion might be to acquire top-management commitment to a sustainability project so that new SCM actors are more likely to work on their predecessors' projects. This ensures that the focal organization

receives a consistent message from the communicating organization and does not receive mixed signals from different SCM actors who change roles in the communicating organizations.

Finally, managers in communicating organizations can leverage the findings to ensure that their sustainability conversations are more influential by utilizing multiple factors in tandem to ensure a successful SSCC phenomenon. For instance, SCM actors in communicating organizations could benefit from approaching organizations, which have a reputation for having a sustainable orientation. This approach would result in a greater likelihood of the focal actors agreeing to work on a SSCM initiative. Once the focal organization has shown some affinity towards the initiative, they can then approach other organizations and utilize the structural equivalence model. The same logic could also be used to first approach a manager in the focal organization with a recognizable sustainability focused outlook and then utilize the structural equivalence model. Using internal sustainability teams of the focal organization could also facilitate the task of convincing the SCM and top-management actors. Therefore, the findings can then aid a communicating organization's actor in devising a plan of action in a manner such that there is the greatest likelihood of SSCC. Figures 6A and 6B summarize the two models for SSCC, with Figure 6B highlighting how multiple communication pathways work in tandem to create a stronger business case for the focal organizations.

**Figure 6:** Illustration of Cohesion and Structural Equivalence model

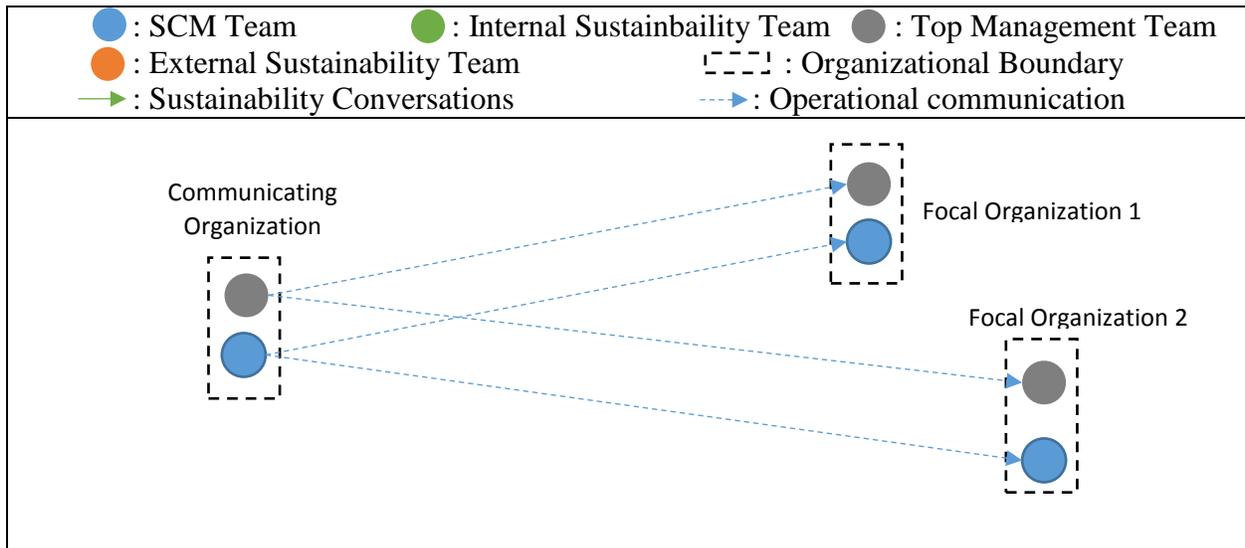


Figure 6A: Cohesion model of SSCC. When the business case is strong the sustainability initiatives are communicated as part of the operations communication and readily accepted by all suppliers.

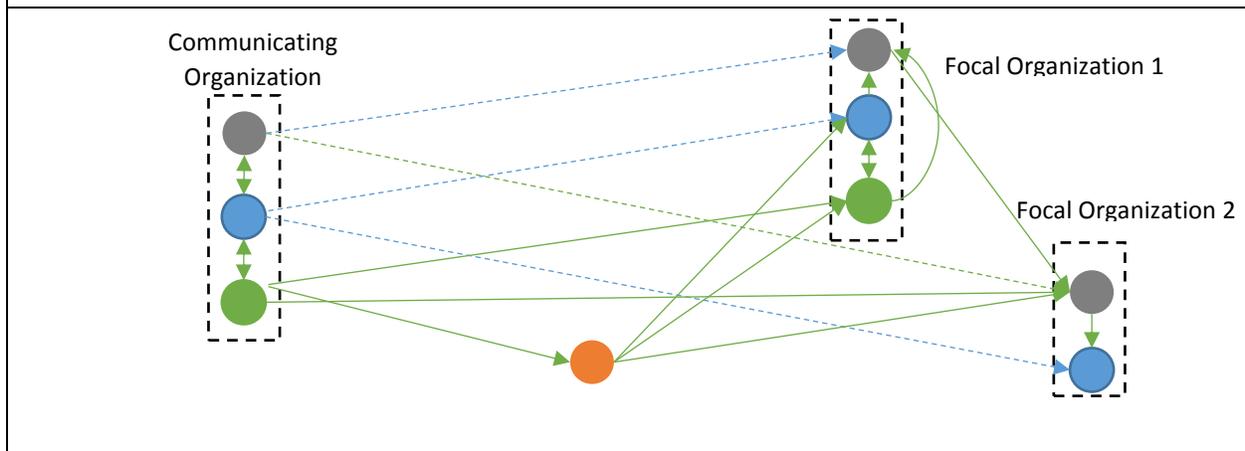


Figure 6B: Structural equivalence model with several factors assisting SSCC. The structural equivalence model is implemented by involving competitors to work together on the sustainability project. For Supplier 1, the internal sustainability and external sustainability teams help develop a business case and a bottom up approach is sufficient. For Supplier 2, the buyer's internal sustainability team, external sustainability team, top-down communication approach, and utilization of the business communication channel communicate the initiative facilities the SSCC process.

## **Limitation**

One of the limitations of this study is that it examines the upstream SSCC phenomenon. Specifically, the focal organization was upstream from the communication organization. However, the contagion will necessarily always be upstream. Our preliminary investigations were based on the literature and therefore influenced our grounded theory study (Andersen & Skjoett-Larsen, 2009; Ayuso et al., 2013; Wilhelm et al., 2016). At the same time, there is little reason to believe that the factors influencing the downstream SSCC phenomenon will be different for the upstream contagion of sustainability. Indeed the network factors, communication factors, and the structural factors should be the same.

Secondly, one of the risk mitigation categorizings of the business case focuses on the role of consumers. However, studies report mixed findings when it comes to consumers' willingness to pay premium prices for sustainable goods (Batte et al., 2007; Laroche et al., 2001; Vloskly et al., 1999). This sentiment was highlighted in the interviews when Participant\_9 stated, "... consumers do believe they are sustainable, but often they don't buy it because it's too expensive." Thus, the business case using this framing might prove ineffective when the particular context does not justify consumers' reactions to the product.

Finally, an assumption in this study is that the focal firm has the resources to ensure that they can implement the SSCM initiatives. The lack of such resources will ensure the failure of SSCC phenomenon, even though the focal firm's actors might be willing to adopt an initiative. When the communicated issues do not match with the focal actor's resource capabilities, the SSCC is more likely to fail (Simpson et al. 2012). It is therefore important that the communication firms perform due diligence in ensuring that they are not communicating initiatives that would prove to be burdensome for the focal firm. Not only is the chance of SSCC

contagion unlikely, but also the communicating firm poses the risk of abusing power (Benton & Maloni, 2005; Maloni & Benton 2000).

## **F. Conclusion**

This study examines the SSCC phenomenon and outlines the network, communication, and structural factors influencing the contagion. The findings reveal that the decision to adopt an initiative is very much a business decision that must be of interest to the SCM actors. Thus, sustainability contagion is contingent on the focal actors recognizing the business case for the initiatives. Moreover, these factors are not mutually exclusive, and the effectiveness of these factors is increased when these factors work in tandem to be convincing to the focal actor.

## G. References

- Abbasi, M., & Nilsson, F. (2012). Themes and challenges in making supply chains environmentally sustainable. *Supply Chain Management: An International Journal*, 17(5), 517-530.
- Andersen, M., & Tage Skjoett-Larsen. (2009). Corporate social responsibility in global supply chains. *Supply Chain Management: An International Journal*, 14(2), 75-86.
- Arenas, D., Lozano, J. M., & Albareda, L. (2009). The role of NGOs in CSR: Mutual perceptions among stakeholders. *Journal of Business Ethics*, 88(1), 175-197.
- Autry, C. W., & Griffis, S. E. (2008). Supply chain capital: The impact of structural and relational linkages on firm execution and innovation. *Journal of Business Logistics*, 29(1), 157-173.
- Awaysheh, A., & Klassen, R. D. (2010). The impact of supply chain structure on the use of supplier socially responsible practices. *International Journal of Operations & Production Management*, 30(12), 1246-1268.
- Ayuso, S., Roca, M., & Colomé, R. (2013). SMEs as “transmitters” of CSR requirements in the supply chain. *Supply Chain Management: An International Journal*, 18(5), 497-508.
- Baron, R. A., & Markman, G. D. (2003). Beyond social capital: The role of entrepreneurs' social competence in their financial success. *Journal of Business Venturing*, 18(1), 41-60.
- Batte, M. T., Hooker, N. H., Haab, T. C., & Beaverson, J. (2007). Putting their money where their mouths are: Consumer willingness to pay for multi-ingredient, processed organic food products. *Food Policy*, 32(2), 145-159.
- Bell, J. E., Autry, C. W., Mollenkopf, D. A., & Thornton, L. M. (2012). A natural resource scarcity typology: Theoretical foundations and strategic implications for supply chain management. *Journal of Business Logistics*, 33(2), 158-166.
- Benton, W., & Maloni, M. (2005). The influence of power driven buyer/seller relationships on supply chain satisfaction. *Journal of Operations Management*, 23(1), 1-22.
- Beske, P., & Seuring, S. (2014). Putting sustainability into supply chain management. *Supply Chain Management: An International Journal*, 19(3), 322-331.
- Besiou, M., & Van Wassenhove, L. N. (2015). Addressing the challenge of modeling for Decision-Making in socially responsible operations. *Production and Operations Management*, 24(9), 1390-1401.

- Borgatti, S. P., & Foster, P. C. (2003). The network paradigm in organizational research: A review and typology. *Journal of Management*, 29(6), 991-1013.
- Borgatti, S. P., & Li, X. (2009). On social network analysis in a supply chain context\*. *Journal of Supply Chain Management*, 45(2), 5-22.
- Brockhaus, S., Kersten, W., & Knemeyer, A. M. (2013). Where do we go from here? Progressing sustainability implementation efforts across supply chains. *Journal of Business Logistics*, 34(2), 167-182.
- Brønn, P. S., & Vidaver-Cohen, D. (2009). Corporate motives for social initiative: Legitimacy, sustainability, or the bottom line? *Journal of Business Ethics*, 87, 91-109.
- Burt, R. (2009). *Structural holes: The social structure of competition*, Harvard University press.
- Burt, R. S. (2004). Structural holes and good ideas<sup>1</sup>. *American Journal of Sociology*, 110(2), 349-399.
- Burt, R. S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, 92(6), 1287-1335.
- Busse, C., Schleper, M. C., Niu, M., & Wagner, S. M. (2016). Supplier development for sustainability: Contextual barriers in global supply chains. *International Journal of Physical Distribution & Logistics Management*, 46(5), 442-468.
- Cantor, D. E., & Macdonald, J. R. (2009). Decision-making in the supply chain: Examining problem solving approaches and information availability. *Journal of Operations Management*, 27(3), 220-232.
- Cantor, D. E., Morrow, P. C., & Montabon, F. (2012). Engagement in environmental behaviors among supply chain management employees: An organizational support theoretical perspective. *Journal of Supply Chain Management*, 48(3), 33-51.
- Cantor, D. E., Morrow, P. C., McElroy, J. C., & Montabon, F. (2013). The role of individual and organizational factors in promoting firm environmental practices. *International Journal of Physical Distribution & Logistics Management*, 43(5), 407-427.
- Carnovale, S., & Yeniyurt, S. (2015). The role of ego network structure in facilitating ego network innovations. *Journal of Supply Chain Management*, 51(2), 22-46.
- Carter, C. R., & Carter, J. R. (1998). Interorganizational determinants of environmental purchasing: Initial evidence from the consumer products industries\*. *Decision Sciences*, 29(3), 659-684.

- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Carter, C. R., & Jennings, M. M. (2002). Logistics social responsibility: An integrative framework. *Journal of Business Logistics*, 23(1), 145-180.
- Clifton, D., & Amran, A. (2011). The stakeholder approach: A sustainability perspective. *Journal of Business Ethics*, 98(1), 121-136.
- Corbin, J. M., & Strauss, A. (1990). Grounded theory research: Procedures, canons, and evaluative criteria. *Qualitative Sociology*, 13(1), 3-21.
- Cornelissen, J. P., Durand, R., Fiss, P. C., Lammers, J. C., & Vaara, E. (2015). *Putting Communication Front and Center in Institutional Theory and Analysis*, 40(1), 10-27.
- Cousins, P. D., Lamming, R. C., & Bowen, F. (2004). The role of risk in environment-related supplier initiatives. *International Journal of Operations & Production Management*, 24(6), 554-565.
- Crook, T. R., & Combs, J. G. (2007). Sources and consequences of bargaining power in supply chains. *Journal of Operations Management*, 25(2), 546-555.
- Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics*, 95(3), 471-486.
- De Clercq, D., Thongpapanl, N., & Voronov, M. (2015). Sustainability in the face of institutional adversity: Market turbulence, network embeddedness, and innovative orientation. *Journal of Business Ethics*, 1-19.
- De Pelsmacker, P., Driesen, L., & Rayp, G. (2005). Do consumers care about ethics? willingness to pay for fair-trade coffee. *Journal of Consumer Affairs*, 39(2), 363-385.
- Deegan, C., & Shelly, M. (2014). Corporate social responsibilities: Alternative perspectives about the need to legislate. *Journal of Business Ethics*, 121(4), 499-526.
- Egels-Zandén, N., & Hyllman, P. (2006). Exploring the effects of union–NGO relationships on corporate responsibility: The case of the Swedish clean clothes campaign. *Journal of Business Ethics*, 64(3), 303-316.
- Ehrgott, M., Reimann, F., Kaufmann, L., & Carter, C. R. (2011). Social sustainability in selecting emerging economy suppliers. *Journal of Business Ethics*, 98(1), 99-119.
- Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51-58.

- Epstein, M. J., & Roy, M. (2003). Making the business case for sustainability. *Journal of Corporate Citizenship*, 9(1), 79-96.
- Finkelstein, S., Hambrick, D. C., & Cannella, A. A. (2009). *Strategic leadership: Theory and research on executives, top management teams, and boards* Oxford University Press, USA.
- Fiss, P. C., & Hirsch, P. M. (2005). The discourse of globalization: Framing and sensemaking of an emerging concept. *American Sociological Review*, 70(1), 29-52.
- Flint, D. J., & Golicic, S. L. (2009). Searching for competitive advantage through sustainability. *International Journal of Physical Distribution & Logistics Management*, 39(10), 841-860.
- Foerstl, K., Azadegan, A., Leppelt, T., & Hartmann, E. (2015). Drivers of supplier sustainability: Moving beyond compliance to commitment. *Journal of Supply Chain Management*, 51(1), 67-92.
- Freeman, L. C. (1978). Centrality in social networks conceptual clarification. *Social Networks*, 1(3), 215-239.
- Galbreth, M. R., & Ghosh, B. (2013). Competition and sustainability: The impact of consumer awareness. *Decision Sciences*, 44(1), 127-159.
- Gattiker, T. F., & Carter, C. R. (2010). Understanding project champions' ability to gain intra-organizational commitment for environmental projects. *Journal of Operations Management*, 28(1), 72-85.
- Gattiker, T. F., Carter, C. R., Huang, X., & Tate, W. L. (2014). Managerial commitment to sustainable supply chain management projects. *Journal of Business Logistics*, 35(4), 318-337.
- Gimenez, C., & Sierra, V. (2013). Sustainable supply chains: Governance mechanisms to greening suppliers. *Journal of Business Ethics*, 116(1), 189-203.
- Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: A systematic literature review. *Supply Chain Management: An International Journal*, 17(5), 531-543.
- Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine
- Gold, S., Seuring, S., & Beske, P. (2010). Sustainable supply chain management and inter-organizational resources: A literature review. *Corporate Social Responsibility and Environmental Management*, 17(4), 230-245.
- Green, J. J., & Thorogood, N. (2009). *Qualitative Methods for Health Research*, Sage.

- Gualandris, J., Klassen, R. D., Vachon, S., & Kalchschmidt, M. (2015). Sustainable evaluation and verification in supply chains: Aligning and leveraging accountability to stakeholders. *Journal of Operations Management*, 38, 1-13.
- Hajmohammad, S., & Vachon, S. (2016). Mitigation, avoidance, or acceptance? managing supplier sustainability risk. *Journal of Supply Chain Management*, 52(2), 48-65.
- Handfield, R., Sroufe, R., & Walton, S. (2005). Integrating environmental management and supply chain strategies. *Business Strategy and the Environment*, 14(1), 1-19.
- Hart, S. L., & Milstein, M. B. (2003). Creating sustainable value. *The Academy of Management Executive*, 17(2), 56-67.
- Hartmann, J., & Moeller, S. (2014). Chain liability in multitier supply chains? responsibility attributions for unsustainable supplier behavior. *Journal of Operations Management*, 32(5), 281-294.
- Hirschman, E. C. (1986). Humanistic inquiry in marketing research: Philosophy, method, and criteria. *Journal of Marketing Research*, , 237-249.
- Hollos, D., Blome, C., & Foerstl, K. (2012). Does sustainable supplier co-operation affect performance? examining implications for the triple bottom line. *International Journal of Production Research*, 50(11), 2968-2986.
- Hunt, S. D., & Nevin, J. R. (1974). Power in a channel of distribution: Sources and consequences. *Journal of Marketing Research*, 23(3) , 186-193.
- Huq, F. A., Chowdhury, I. N., & Klassen, R. D. (2016). Social management capabilities of multinational buying firms and their emerging market suppliers: An exploratory study of the clothing industry. *Journal of Operations Management*, 46, 19-37.
- Hyatt, D. G., & Johnson, J. L. (2016). Expanding boundaries: Nongovernmental organizations as supply chain members. *Elementa: Science of the Anthropocene*, 4(1), 000093.
- Jamali, D., & Keshishian, T. (2009). Uneasy alliances: Lessons learned from partnerships between businesses and NGOs in the context of CSR. *Journal of Business Ethics*, 84(2), 277-295.
- Kalfagianni, A. (2014). Addressing the global sustainability challenge: The potential and pitfalls of private governance from the perspective of human capabilities. *Journal of Business Ethics*, 122(2), 307-320.
- Kirchoff, J. F., Omar, A., & Fugate, B. S. (2016). A behavioral theory of sustainable supply chain management decision making in Non-exemplar firms. *Journal of Supply Chain Management*, 52(1), 41-65.

- Kleine, A., & Von Hauff, M. (2009). Sustainability-driven implementation of corporate social responsibility: Application of the integrative sustainability triangle. *Journal of Business Ethics*, 85 (3), 517-533.
- Klettner, A., Clarke, T., & Boersma, M. (2014). The governance of corporate sustainability: Empirical insights into the development, leadership and implementation of responsible business strategy. *Journal of Business Ethics*, 122(1), 145-165.
- Krause, D. R., Vachon, S., & Klassen, R. D. (2009). Special topic forum on sustainable supply chain management: Introduction and reflections on the role of purchasing management. *Journal of Supply Chain Management*, 45(4), 18-25.
- Laroche, M., Bergeron, J., & Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. *Journal of Consumer Marketing*, 18(6), 503-520.
- Levinthal, D. A., & March, J. G. (1993). The myopia of learning. *Strategic Management Journal*, 14(S2), 95-112.
- Lieberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, 38(6), 523-534.
- Lieberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, 75(1), 5.
- Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, 25(6), 1075-1082.
- López, M. V., Garcia, A., & Rodriguez, L. (2007). Sustainable development and corporate performance: A study based on the dow jones sustainability index. *Journal of Business Ethics*, 75(3), 285-300.
- Lourenço, I. C., Callen, J. L., Branco, M. C., & Curto, J. D. (2014). The value relevance of reputation for sustainability leadership. *Journal of Business Ethics*, 119(1), 17-28.
- Lu, R. X. A., Lee, P. K. C., & Cheng, T. C. E. (2012). Socially responsible supplier development: Construct development and measurement validation. *International Journal of Production Economics*, 140(1), 160-167.
- Marshall, Donna, Lucy McCarthy, Marius Claudy, and Paul McGrath. (2016). "Piggy in the Middle: How Direct Customer Power Affects First-Tier Suppliers' Adoption of Socially Responsible Procurement Practices and Performance." *Journal of Business Ethics*, 1-22.
- Maloni, M., & Benton, W. C. (2000). Power influences in the supply chain. *Journal of Business Logistics*, 21(1), 49-74.

- Matos, S., & Hall, J. (2007). Integrating sustainable development in the supply chain: The case of life cycle assessment in oil and gas and agricultural biotechnology. *Journal of Operations Management*, 25(6), 1083-1102.
- McDonald, S., & Young, S. (2012). Cross-sector collaboration shaping corporate social responsibility best practice within the mining industry. *Journal of Cleaner Production*, 37, 54-67.
- McFarland, R. G., Bloodgood, J. M., & Payan, J. M. (2008). Supply chain contagion. *Journal of Marketing*, 72(2), 63-79.
- Mello, J., & Flint, D. J. (2009). a refined view of grounded theory and its application to logistics research. *Journal of Business Logistics*, 30(1), 107-125.
- Mentzer, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, Z. G. (2001). Defining supply chain management. *Journal of Business Logistics*, 22(2), 1-25.
- Mentzer, J. T., Stank, T. P., & Esper, T. L. (2008). Supply chain management and its relationship to logistics, marketing, production, and operations management. *Journal of Business Logistics*, 29(1), 31-46.
- Metcalf, L., & Benn, S. (2013). Leadership for sustainability: An evolution of leadership ability. *Journal of Business Ethics*, 112(3), 369-384.
- Meyer, A. D., & Goes, J. B. (1988). Organizational assimilation of innovations: A multilevel contextual analysis. *Academy of Management Journal*, 31(4), 897-923.
- Miles, M. P., & Covin, J. G. (2000). Environmental marketing: A source of reputational, competitive, and financial advantage. *Journal of Business Ethics*, 23(3), 299-311.
- Mitchell, R. K., Agle, B. R., & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts. *Academy of Management Review*, 22(4), 853-886.
- Montabon, F. L., Pagell, M., & Wu, Z. (2016). Making sustainability sustainable. *Journal of Supply Chain Management*, 52(2), 11-27.
- Montabon, F., Sroufe, R., & Narasimhan, R. (2007). An examination of corporate reporting, environmental management practices and firm performance. *Journal of Operations Management*, 25(5), 998-1014.
- Morimoto, R., Ash, J., & Hope, C. (2005). Corporate social responsibility audit: From theory to practice. *Journal of Business Ethics*, 62(4), 315-325.

- Nair, A., Yan, T., Ro, Y. K., Oke, A., Chiles, T. H., & Lee, S. (2016). How environmental innovations emerge and proliferate in supply networks: A complex adaptive systems perspective. *Journal of Supply Chain Management*, 52(2), 66-86.
- Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. *Journal of Supply Chain Management*, 45(2), 37-56.
- Parguel, B., Benoît-Moreau, F., & Larceneux, F. (2011). How sustainability ratings might deter 'greenwashing': A closer look at ethical corporate communication. *Journal of Business Ethics*, 102(1), 15-28.
- Paulraj, A. (2011). Understanding the relationships between internal resources and capabilities, sustainable supply management and organizational sustainability\*. *Journal of Supply Chain Management*, 47(1), 19-37.
- Peters, N. J., Hofstetter, J. S., & Hoffmann, V. H. (2011). Institutional entrepreneurship capabilities for interorganizational sustainable supply chain strategies. *The International Journal of Logistics Management*, 22(1), 52-86.
- Pilbeam, C., Alvarez, G., & Wilson, H. (2012). The governance of supply networks: A systematic literature review. *Supply Chain Management: An International Journal*, 17(4), 358-376.
- Porteous, A. H., Rammohan, S. V., & Lee, H. L. (2015). Carrots or sticks? improving social and environmental compliance at suppliers through incentives and penalties. *Production and Operations Management*, 24(9), 1402-1413.
- Pratt, M. G. (2009). From the editors: For the lack of a boilerplate: Tips on writing up (and reviewing) qualitative research. *Academy of Management Journal*, 52(5), 856-862.
- Rauer, J., & Kaufmann, L. (2015). Mitigating external barriers to implementing green supply chain management: A grounded theory investigation of Green-Tech companies' rare earth metals supply chains. *Journal of Supply Chain Management*, 51(2), 65-88.
- Rego, A., e Cunha, M. P., & Polónia, D. (2015). Corporate sustainability: A view from the top. *Journal of Business Ethics*, 1-25.
- Reilly, A. H., & Hynan, K. A. (2014). Corporate communication, sustainability, and social media: It's not easy (really) being green. *Business Horizons*, 57(6), 747-758.
- Rowley, J. (2012). Conducting research interviews. *Management Research Review*, 35(3/4), 260-271.

- Salzmann, O., Ionescu-Somers, A., & Steger, U. (2005). The business case for corporate sustainability: Literature review and research options. *European Management Journal*, 23(1), 27-36.
- Saunders, L. W., Tate, W. L., Zsidisin, G. A., & Miemczyk, J. (2017). The Influence of Network Exchange Brokers on Sustainable Initiatives in Organizational Networks. *Journal of Business Ethics*, 1-20.
- Schreck, P. (2011). Reviewing the business case for corporate social responsibility: New evidence and analysis. *Journal of Business Ethics*, 103(2), 167-188.
- Seele, P., & Lock, I. (2015). Instrumental and/or deliberative? A typology of CSR communication tools. *Journal of Business Ethics*, 131(2), 401-414.
- Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699-1710.
- Signori, P., Flint, D. J., & Golicic, S. (2015). Toward sustainable supply chain orientation (SSCO): Mapping managerial perspectives. *International Journal of Physical Distribution & Logistics Management*, 45(6), 536-564.
- Simpson, D., Power, D., & Klassen, R. (2012). When one size does not fit all: A problem of fit rather than failure for voluntary management standards. *Journal of Business Ethics*, 110(1), 85-95.
- Singh, J. J., Iglesias, O., & Batista-Foguet, J. M. (2012). Does having an ethical brand matter? the influence of consumer perceived ethicality on trust, affect and loyalty. *Journal of Business Ethics*, 111(4), 541-549.
- Singh, J., de los Salmones Sanchez, Maria del Mar Garcia, & del Bosque, I. R. (2008). Understanding corporate social responsibility and product perceptions in consumer markets: A cross-cultural evaluation. *Journal of Business Ethics*, 80(3), 597-611.
- Smets, M., Morris, T., & Greenwood, R. (2012). From practice to field: A multilevel model of practice-driven institutional change. *Academy of Management Journal*, 55(4), 877-904.
- Sodhi, M. S. (2015). Conceptualizing social responsibility in operations via stakeholder Resource-Based view. *Production and Operations Management*, 24(9), 1375-1389.
- Strand, R. (2013). The chief officer of corporate social responsibility: A study of its presence in top management teams. *Journal of Business Ethics*, 112(4), 721-734.
- Strauss, A., & Corbin, J. (1990). *Basics of qualitative research*. Newbury Park, CA: Sage.
- Suddaby, R. (2006). From the editors: What grounded theory is not. *Academy of Management Journal*, 49(4), 633-642.

- Tachizawa, E. M., & Wong, C. Y. (2015). The performance of green supply chain management governance mechanisms: A supply network and complexity perspective. *Journal of Supply Chain Management*, 51(3), 18-32.
- Tate, W. L., Ellram, L. M., & Gölgeci, I. (2013). Diffusion of environmental business practices: A network approach. *Journal of Purchasing and Supply Management*, 19(4), 264-275.
- Tay, M. Y., Rahman, A. A., Aziz, Y. A., & Sidek, S. (2015). A review on drivers and barriers towards sustainable supply chain practices. *International Journal of Social Science and Humanity*, 5(10), 892-897.
- Teuscher, P., Grüninger, B., & Ferdinand, N. (2006). Risk management in sustainable supply chain management (SSCM): Lessons learnt from the case of GMO-free soybeans. *Corporate Social Responsibility and Environmental Management*, 13(1), 1-10.
- Thomas, T. E., & Lamm, E. (2012). Legitimacy and organizational sustainability. *Journal of Business Ethics*, 110(2), 191-203.
- Tilton, J. E. (1996). Exhaustible resources and sustainable development: Two different paradigms. *Resources Policy*, 22(1-2), 91-97.
- United Nations Global Compact report. Retrieved from <http://supply-chain.unglobalcompact.org/site/article/50>
- Utting, K. (2009). Assessing the impact of fair trade coffee: Towards an integrative framework. *Journal of Business Ethics*, 86, 127-149.
- Vachon, S., & Klassen, R. D. (2008). Environmental management and manufacturing performance: The role of collaboration in the supply chain. *International Journal of Production Economics*, 111(2), 299-315.
- Van Marrewijk, M. (2003). Concepts and definitions of CSR and corporate sustainability: Between agency and communion. *Journal of Business Ethics*, 44(2), 95-105.
- Vlosky, R. P., Ozanne, L. K., & Fontenot, R. J. (1999). A conceptual model of US consumer willingness-to-pay for environmentally certified wood products. *Journal of Consumer Marketing*, 16(2), 122-140.
- Vurro, C., Russo, A., & Perrini, F. (2009). Shaping sustainable value chains: Network determinants of supply chain governance models. *Journal of Business Ethics*, 90, 607-621.
- Wagner, M. (2010). Corporate social performance and innovation with high social benefits: A quantitative analysis. *Journal of Business Ethics*, 94(4), 581-594.

- Waller, M. A., Fawcett, S. E., & Johnson, J. L. (2015). The luxury paradox: How systems thinking and supply chain collaboration can bring sustainability into mainstream practice. *Journal of Business Logistics*, 36(4), 303-305.
- Walls, J. L., & Berrone, P. (2015). The power of one to make a difference: How informal and formal CEO power affect environmental sustainability. *Journal of Business Ethics*, 1-16.
- Weick, K. E. (1995). *Sensemaking in organizations* Sage.
- Wichmann, B. K., Carter, C. R., Kaufmann, L., & Wilson, J. R. (2016). Making environmental SCM initiatives Work—Moving beyond the dyad to gain affective commitment. *Journal of Supply Chain Management*, 52(1), 21-40.
- Wilhelm, M. M., Blome, C., Bhakoo, V., & Paulraj, A. (2016). Sustainability in multi-tier supply chains: Understanding the double agency role of the first-tier supplier. *Journal of Operations Management*, 41, 42-60.
- Wu, Z., & Pagell, M. (2011). Balancing priorities: Decision-making in sustainable supply chain management. *Journal of Operations Management*, 29(6), 577-590.
- York, J. G. (2009). Pragmatic sustainability: Translating environmental ethics into competitive advantage. *Journal of Business Ethics*, 85, 97-109.
- Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in chinese manufacturing enterprises. *Journal of Operations Management*, 22(3), 265-289.
- Zwetsloot, G. I. (2003). From management systems to corporate social responsibility. *Journal of Business Ethics*, 44(2), 201-208.

## H. Appendix

### Appendix A: Interview quotes supporting the category construction

Category	Illustrative Quotes from interviews
Alignment with work category	Yeah, I think it all boils down to at the end of the day what kind of advantage you are going to get in the marketplace. – Participant_1
	Laying out a vision of how we could use that visibility working together to reduce their costs, reduce my costs, and also reduce things like freight miles, reduce fuel costs. – Participant_7
	... our practices can be mostly related to equipment, routes, how do you match up loads, backhauls, creating efficiencies within a system – Participant_20
	... if you're a leader and pro-active in the area, you have an opportunity to differentiate an ability and if you do things right and you put them in simple terms that consumers in particular can or the you know the retailers can relate to that and see the value of that then, then, you definitely have, have a winning platform. – Participant_5
	obviously in a manufacturing context, it could be about cost transformation. So it could be that by choosing an alternative energy solution or making capital investment in energy we can have both a positive climate benefit as well as reduced energy costs. And really you need both working for you to justify it as a sustainability program. But in the brand example I gave it would be brand oriented metrics. So a brand team might think about it from a cost perspective, but, typically, they would only do so in comparison to other things they might run. – Participant_12
Complexity	They're just limited on time you know like time to focus on things like sustainability and all the other things they get flooded with. But we also have other initiatives. – Participant_14
	We're talking about very complex issues. They're nuanced, everything is interconnected. There's tradeoffs and I think people feel sometimes paralyzed. If the answers were easy, then we would just go, we would just go solve the problem, right? But it's not simple it's not easy and it's a long term view. So I think that that's something that burdens all of us. – Participant_11
	The hardest part for sustainability ... is being able to track and report on what we do. That's probably the hardest part of it for us, is being able to actually report back on the sustainable stuff we do. – Participant_6

Category	Illustrative Quotes from interviews
Business case – Economic Performance	Well one of the things that I've had experience with ... is that what success in sustainability usually translates into producing more with less. – Participant_5
	Well usually, efficiencies when they are going through the system, have the effect of reducing the cost. For example if we can reduce, empty miles by monitoring with our own system, how you optimize the network, you have loads, how you match them up. That creates cost savings. And that's in our best interests. The byproduct of that is that it means also less fuel burst, less emissions. – Participant_20
	... would not be doing sustainability or work on sustainably if it wasn't good for the business and it's- that's the harsh reality and it's unfortunate. – Participant_14
	The supplier is only going to make a change like that if they can get additional value out of the change, either higher price or lower cost – Participant_1
	think that a lot of times what makes a program attractive from a customer perspective, if a customer brings forth a program, is understanding the commercial benefits of participating in the program- Participant_12
Business case – Risk Mitigation	And so, again and I've said this so many times when you frame things to suppliers and buyers on our end you have to talk about the business benefit and you have to ensure that whatever you're pitching to these guys is not going to be a huge cost burden on the suppliers. – Participant_14
	. And people that fundamentally believe in those values or are you know very loyal to their brand. – Participant_13
	Last thing I want is, especially with my own private brands is I don't want the bad publicity because somebody cut a corner somewhere around a cost input. – Participant_13
	We're going to need pretty much everything we produce today and, create more sustainable over time with less environmental impact while continuing to do with as much social diligence as we can and, look at the economic as well all of the imbalance. – Participant_6
	So if you ensure a future supply, you're ensuring you know the viability of your business in the long term. And, yeah I mean ultimately the sustainability of like the global population – Participant_14
... has sort of a cost-cutting role on the strategy as well as areas around innovation or other kinds of supply-chain activity or stakeholder engagement. – Participant-12	
... here are some hurdles that they be addressed if there are innovation that could come into play – Participant_5	

Category	Illustrative Quotes from interviews
Mode of contagion	<p data-bbox="453 232 1709 261">So we do need the retailers and the N.G.O.s. putting pressure on you know the vinyl market segments. – Participant_5</p> <p data-bbox="453 295 1877 415">So if you go and ask one of your suppliers who say “you know what we want you to make the box smaller and get rid of that shiny stuff and all the bells and whistles,” and that supplier will say “look if I do that as you said my product on the shelf will be much less attractive and we will lose to the market competition.” So one of the things that we do to the suppliers is about we have to setup a sort of- level the playground where our supply and the purchasing standard has to be uniform applying to the industry. – Participant_9</p> <p data-bbox="453 445 1885 505">Well, I think that retail trading partners as well as our B-to-B customers bring forth new ideas in different ways. So sometimes that will be within the context of customers that we have surveying us about our own activities and then giving feedback. – Participant_12</p> <p data-bbox="453 539 1864 628">I would say that outside interest or influence or pressure from investors so socially responsible investment community or the N.G.O., the non-governmental organization community where they may be putting pressure on companies to raise their performance in different categories that are of interest to that specific organization. That's certainly one way. – Participant_13</p>
Sustainability teams	<p data-bbox="453 662 1444 691">We receive a lot of questionnaires that say, "Okay, what are your initiatives? – Participant_21</p> <p data-bbox="453 691 1871 780">Those are people that I know that I go to their meetings, they know who I am. I'm their resource. I regularly keep them up to speed. I share things with them like their scorecard results and other data. Coming in on sustainability I can go with them and sit at their meetings when they have joint business planning with their suppliers – Participant_11</p> <p data-bbox="453 814 1885 903">That (sustainability) team sits within global supply chain so it's an enterprise option that cuts across all of our operating units. My team looks at a couple of key things, but specifically for overall strategy development and deployment for environmental and social is one key area. – Participant 12</p> <p data-bbox="453 937 1885 1053">I'll have calls with our buyers their salespeople in sustainability and we'll talk about progress with sustainability initiatives. You know those are really effective meetings because you have literally the business on the call and sustainability of the call and the business is wanting to take ownership of these things that even though they barely do any of the work they will take ownership and it's a good thing when they do. – Participant_14</p>

Category	Illustrative Quotes from interviews
Communication pathway	<p>there are corporate sustainability expectations that get cascaded down from the sustainability team to the merchant organization which the buyers will be held accountable to execute. There's a communication between the sustainability organization and the merchant team. – Participant_18</p>
	<p>Quite candidly, it really was more of a senior to senior conversation to justify the sustainable steps the company would take and I know I'm being vague because it's a little bit of art as opposed to science because it wasn't a part of the accountability team. – Participant_8</p>
	<p>Well, it depends on what it is. If you are talking about purchasing new technology then that would come at the higher levels, the corporate management. If you are talking about local operations and wants to operate more efficiently then that would take place at the local level. – Participant_20</p>
	<p>On the supply chain side meaning on the sourcing and procurement side, it would be the buyers who are communicating these types of expectations (sustainable) but also memorializing them in legal language as part of the agreement or the purchase order. – Participant_13</p>
	<p>I think it tends to be procreated ...from a top management perspective, it's just bringing them on the journey, more than anything. It's not sort of a thumbs-up, thumbs-down. I mean usually by the time you get to a top management perspective, all of the groups underneath have been aligned so that it's more of a presentation of directionally, here's where we want to go, and it's more of an affirmation. – Participant_12</p>
Distance	<p>Depends on the project, the size, the scope, and the size of the project. The buyer will try to take care of it, if they can. Sometimes you may have to enlist your boss or you'll have to reach out to senior leadership at somewhere. Participant_7</p>
	<p>That's a good question. I think we've been reasonable successful where we have a direct relationship. So in the case of food corn, in the case of oats, oranges, and potatoes. – Participant_17</p>
	<p>Do we deal with them directly? – Participant_16</p>

Category	Illustrative Quotes from interviews
Description	<p>So our response would be “yes we'll be happy to take it into consideration,” but the question is does it really help with creating a more sustainable product? – Participant_5</p> <p>But you have to do it diligently like that rather than just saying “we've decided all of a sudden to create zero waste, to reduce our carbon footprint by 50%, and you know change the whole energy to renewable sources. – Participant_5</p> <p>Typically if you can show that if you are burning less fuel, fuel is a huge cost for trucking. For example, aerodynamics. You can purchase aerodynamic kits for trucks. If you can show that over the period of time, over the life of the purchase, save you x gallons of fuel then, People will adopt the technology. – Participant_20</p> <p>So there are different ways that you can partner with suppliers, but the central theme of it is, it can't just be information for information sake, and it can't be information where it's, "Hey, here's how you did," but context-free. It needs to be action-biased and benefit-biased. – Participant_12</p> <p>So if the retailer has done all that and then goes up and says look we have done this due diligence. We know what's important and let's work together and address it. – Participant_7</p>
Consistency	<p>They came together because they didn't want to continue to bombard their suppliers with different versions of the same sustainability questionnaires year after year. – Participant_21</p> <p>And then the initiative has a chance of living beyond the individual. Because what's not unusual for us to see is buyers move or evolve and change roles. But we don't want to do is start a big initiative or start something that's very labor intensive or expensive. And just have it disappear when the next buyer comes along. – Participant_17</p> <p>I feel like the best thing we can do for the suppliers is to keep the “asks” consistent over time. – Participant_11</p>
Power	<p>One is influence and the other is requirement – Participant_13</p> <p>I think first and foremost it would be an expectation of doing business with our company. – Participant_14</p> <p>S: So yeah that's a good question. I'd say it's a lot more difficult when it's a voluntary program than when it's a mandatory program. And many of our programs ultimately become mandatory. – Participant_13</p> <p>Usually we have a purchasing manager that hold the meeting with suppliers and agents, and with each individually because they're competitors. He says what our requirements are and that's how we want it to be done, otherwise we cannot work with you. – Participant_16</p>

Category	Illustrative Quotes from interviews
Collaboration	<p>But it also depends on the relationship you have with that other business. So if you're approaching a new business that you've never worked with before then there's a high chance they will say no. If you're approaching a business that you have worked with for years they will definitely think twice about it. – Participant_19</p> <p>We do collaborate with downstream associations and producers of the final product and I am fairly familiar with the issues integrating the entire value chain. I mean I've been a strong advocate for collaboration. – Participant_1</p> <p>Collaborative initiatives are much better than one-off...if we're all speaking the same language then we'll drive change to a greater extent. – Participant_14</p> <p>So they argued and it took, the leap of faith that both organization took was really rewarded with a long term relationship that was mutually beneficial in business. – Participant_3</p>
Organizational sustainability orientation	<p>Now in ... there is a very large sustainability program that really goes across the organization. – Participant_4</p> <p>They understand we have sustainability goals and they're generally willing to being able to work on a project if that project is already like in motion. – Participnat_14</p> <p>An excellent example would be Patagonia I think they have a very obviously have a very focused set of sort of corporate values. – Participant_13</p> <p>.. The last 3 years we don't produce anymore plastic bags, even though pharmacies ask us to "please produce them" and we're like "No. We better invest into something else because plastic is plastic." – Participant_16</p>
Individual sustainability orientation	<p>We prefer to work with company that are ethical and that are more or less, more follow the rules. – Participant_16</p> <p>they said, "You know we want to do this more often." – Participant_21</p> <p>And then there are other buyers who say "hey, I've got a day job. I'm as busy as I can be" or "you know the prices, you know, are through the roof for food right now especially in the protein categories you know. – Participant_11</p> <p>Generally they want to do the right thing. – Participant_14</p>

## Appendix B: IRB



Office of Research Compliance  
Institutional Review Board

January 20, 2017

### MEMORANDUM

TO: Saif Mir  
Brian Fugate  
Jon Johnson  
John Aloysius

FROM: Ro Windwalker  
IRB Coordinator

RE: PROJECT CONTINUATION

IRB Protocol #: 15-12-445

Protocol Title: *Drivers and Barriers in Adoption of Sustainability Practices Across Supply Chain Echelons*

Review Type:  EXEMPT  EXPEDITED  FULL IRB

Previous Approval Period: Start Date: 01/11/2016 Expiration Date: 01/10/2017

New Expiration Date: 01/10/2018

Your request to extend the referenced protocol has been approved by the IRB. If at the end of this period you wish to continue the project, you must submit a request using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. Failure to obtain approval for a continuation on or prior to this new expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

**This protocol has been approved for 40 total participants.** If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval prior to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or [irb@uark.edu](mailto:irb@uark.edu).

### **III. Chapter 3**

#### **A. Introduction**

Agenda 2030, a multi-nation United Nations sustainability initiative, has developed several programs to combat issues such as reducing world hunger, lessening the fear of violence, and protecting the environment and the planet (Shankar & Foster, 2016). One such initiative in China, called Baidu Recycle, leverages normative messages to positively influence recycling behavior. These messages are influential because of the ability to convey beliefs of social approval and thereby influence individuals to act in a manner acceptable to society (Cialdini & Goldstein, 2004; Cialdini, 2003; Cialdini et al., 1990). This research examines the efficacy of messages scripted using normative theory to target and modify employee behavior. Recently, scholars have started to investigate the organizational implementation of environmentally friendly practices by motivating voluntary pro-environmental behavior of employees (VPBE) (Lülfes & Hahn, 2014, 2013). These behaviors are non-mandated and non-incentivized (Lülfes & Hahn, 2014, 2013). Thus, VPBE advances the sustainability goals without any added cost of monitoring or rewarding. While Carrico and Piemer, (2011) investigated the energy conservation behavior of employees at the workplace, energy conservation was not directly linked to employee job responsibility. The context of this study, truck idling, is a direct result of the operational responsibilities. This is important, since environmental practices benefit operational performance (Sroufe, 2003). Therefore, this study investigates employee behavior, which is aligned with the operational responsibility of the employees.

Employees are a key force behind the success of environmental management practices, which in turn has a positive impact on the firm's valuation and performance (Cantor et al., 2012; Dowell et al., 2000; Klassen & McLaughlin, 1996)). Job pride, perceived fit in the organization, and expectations about fair treatment from companies all drive new employees to seek employment in companies with a

focus on sustainability practices (Jones et al., 2013). But, environmental management practices seldom utilize non-mandated initiatives for operational performance losing the opportunity to tap into employees' beliefs to successfully promote a program. The field experiment conducted in this study examines truck driver inclination to reduce idling without any benefits or rewards. It contributes to the literature by highlighting messages as a tool to influence employees. The existing literature has evaluated the impact of employee work performance by highlighting several motivating factors such as incentives, financial or non-financial gifts, wage increases, and recognition (Brandler et al., 2016; Cohn et al., 2014; Englmaier et al., 2016; Kube et al., 2012). The findings from the field experiment illustrate the effectiveness of initiatives to influence employees to partake in environmental management practices without any incentives.

Truck idling are instances when the engine is on, but the truck is not moving. While a small percentage of operational idling is expected such as during starting and stopping the engines and in heavy traffic, a large portion of idling occurs during rest stops and the loading/unloading process. The non-operational type of idling is to ensure comfort levels in the cabin (Rahman et al., 2013). A 2016 Environmental Protection Agency report cites that reducing unnecessary idling can result in saving over 900 gallons of fuel for a typical long-haul truck. Consequently, it would reduce nine metric tons of carbon dioxide and reduce emissions for other harmful gasses like sulfur dioxide, carbon monoxide, and other hydrocarbons that can lead to respiratory problems, bronchitis, and asthma attacks resulting in work loss days and hospital admissions. Moreover, for a trucking firm, the cost savings from the unused fuel would average \$3,600 per truck. Therefore, a successful idling reduction program would be beneficial to the environment as well as for the organization. Various technologies on idle time control are being advocated to provide electric supplies to a truck so that truck drivers may be able to maintain the comfort levels without expending fuel (Shancita et al., 2014). Truck idling is one factor that can be

changed by changing the behavior of the drivers. The voluntary aspect of truck idling makes it a suitable context for the subject of the investigation.

In a field experiment conducted over 13 weeks, 645 trucks in a trucking company's fleet were sent five types of messages, and the truck idling behavior was compared to a control group which did not receive any message. By examining truck idling over 13 weeks, the study also examines the persistence of the behavioral effects of messaging. The continued existence of behavioral change after an intervention has not been investigated in the organizational context of VPBE. The relatively few studies that examined the persistence of the effects of messaging have reported mixed findings (Asensio & Delmas, 2016; Berenedo et al., 2014). As environmental management practices become integral to organizational strategies, scholars have called for the examination of ways to influence employees (Croson & Treich, 2014). Therefore, this study is important in the context of organizational environmental management practices (EMP) to better implement such initiatives and ensure success while taking into account the persistence of employee behaviors.

The five messages were based on the literature highlighting the role of norms in influencing behavior (Cialdini et al., 1991, 1990; Schwartz 1977). Norms have also been posited as an important aspect of employee participation in VPBE (Lülfes & Hahn, 2014, 2013). Social norms are representative of the expectations and obligations of the society, while personal norms, even though they are generated through social interactions, are expectations and obligations from the self (Cialdini et al., 1991, 1990; Schwartz 1977). The first three types of messages highlighted the pro-environmental aspect of truck idling. Pro-environmental behavior has been defined as “a mixture of self-interest and concern for other people, the next generation, other species, or whole eco-systems” (Bamberg & Möser, 2007). Thus, pro-environmental normative messages utilize social or personal normative information to target an undesirable behavior, which impacts the environment. Social norms are of two types,

injunctive and descriptive (Cialdini et al., 1991, 1990). Injunctive pro-environmental messages highlighted the approved truck idling behavior as a measure to save the environment. The descriptive message stated the present idling behavior of the drivers in the fleet. The personal pro-environmental message captured the moral obligations of the driver in saving the environment by reducing idling. Since VPBE are not only aligned with the organizational sustainability goals but also have an added economic benefit; two other messages highlighting the pro-organizational gains of reducing idling, and thereby minimizing costs, were also utilized. These messages were framed using the injunctive and personal norm framing. For instance, while Carrico and Riemer (2011) focused on employee energy conservation practices and the social implications thereof, an alternate organizational motive could be the indirect savings to the organization. Manipulation of pro-organizational messages involved highlighting the savings to fuel costs by reducing idling. The descriptive norm framing did not state an environmental or organizational benefit, but based on previous studies, has been included in the pro-environmental category. Prior studies in social psychology have looked into the effects of social and personal norms in encouraging pro-environmental behavior in activities such as recycling and littering. The positive effect of using normative messages in promoting pro-environmental behaviors in activities like water conservation, plastic bag recycling, and littering reduction have also been examined (Cialdini et al., 1990; De Groot et al., 2013; Hopper & Nielsen, 1991; Schultz et al., 2008). The pro-organizational aspect of messaging is based on the literature of organizational citizenship behavior and has been overlooked (Boiral, 2009). This is another contribution to this study, which analyzes the impact of targeting non-managers with messages to induce organizational citizenship behavior as a measure to save organizational costs.

The findings reveal an impact of injunctive pro-environmental and descriptive framing in reducing idling. However, the change in idling behavior is temporary as the truck drivers revert to old

habits with time. However, the study also highlights a context effect. The truck drivers in any truck can change at any time depending on the turnover or any other operational reason. When the data is analyzed at the truck level, the study found a significant persistent reduced idling post intervention for the injunctive pro-environmental and descriptive group. These findings present several insights for academics and practitioners. It calls to question the assumption to modify behavior utilizing the same messages in the long run. The results indicate that the messages were influential when there were new recipients of the message. In an organizational where the employees remain the same the effects are likely to fade after a while. However, the significant treatment effect at the group level indicates that organizations are more likely to implement VPBE initiatives by mixing up message at regular interval. While the last implication is not hypothesized or tested it is the most likely explanation for the fading of effects at the individual level, but the persistence of treatment effects at the group level.

## **B. Theory and Hypotheses Development**

Any behavior that can impact the environment, by changing the availability of materials or energy or altering the structure or dynamics of the ecosystem may be termed as pro - environmental behavior (Stern, 2000). While making these pro-environmental decisions, individuals are motivated more by the impact that they are making on the environment, than the benefit that they can reap from such action (Lindenberg & Steg, 2007). The objective of this section is to provide a background on operational EMP and the individual's role in the management of operational EMPs. This is followed by a review of the two perspectives used in this study: Focus theory of normative conduct and Norm activation model. The hypotheses are interwoven within the literature review.

One of the determinants of employee participation in environmental management practices is the organizational culture or the organizational emphasis on sustainability (Bansal, 2005; Carter & Rogers, 2008). One manner of embedding these into the workforce is by creating formal certification

processes and implementing a code of conduct (Boiral, 2007; Gonzalez et al., 2008; Heras-Saizarbitoria & Boiral, 2013; Kaptein & Schwartz, 2008). Studies in the advancement of organizational environmental practices have shown that firms need to “sell” their idea to the individuals responsible for the implementation of the practices or activities (Bansal, 2003). Russo and Harrison (2005) examined the congruence between the salaries of facility managers and of environmental quality managers in a plant. They found a positive association between environmental quality and the salaries of facility managers, but did not find the same for environment managers. This suggests that individuals who are not directly involved in organizational environmental pursuits may need some motivation for adopting a green approach. Additionally, firms where employees are responsible for environment-related tasks are found to perform better than firms where there is no one tasked with the responsibility (Aragón-Correa et al., 2004). Motivating employees by educating and training employees has also been found to be successful (Haugh & Talwar, 2010; McGuire & Garav, 2010). On an individual level, Cantor et al., 2012 examined the relationship between individual employee level perceptions about EMP’s and employee participation in such activities. They found a significant relation between employee perceptions of the organizational support for environmental behaviors and employee engagement in such activities. Training, rewards, and support from supervisors were found to be significant predictors of employee perceptions of organizational support for environmental behaviors.

Environmental psychologists have differentiated between the formally outlined pro-environmental behavior and VPBE (Lülfes & Hahn, 2013, 2014). Compliance with VPBE does not require any incentive or compensation schemes. Furthermore, VPBE is a manifestation of the organizational contexts and the individual norms into work-related behavior (Lülfes and Hahn, 2013, 2014). VPBE is, therefore, a direct result of the sustainable intentions derived from the interaction of the organizational culture and individual beliefs. The field experiment leverages truck drivers from one

company and thus the organizational factors are kept constant. By manipulating messages scripted utilizing different norms, the field experiment successfully isolates the effect of normative messages on truck driver idling behavior.

Moreover, studies have focused on the short-term effects of messaging. In other words, these effects are behavioral changes as a response to messages in the short run (Carrico & Riemer, 2011; Nolan et al., 2008). From an organizational perspective, the long-term efficacy of the messages needs to be evaluated (Croson & Treich, 2014). Not much work has been done evaluating the long-term persistence of normative messages. In the long run, the efficacy of the messages seems to wear off due to the individuals reverting to their previous habits (Allcott & Rogers, 2013). Habit arises from expectations based on previous experiences (Verplanken & Wood, 2006). As a result of the habit formation, the efficacy of messages in changing behavior has been found questionable (Limayem et al., 2007). In the context of idling, habit would imply the drivers' comfort associated with keeping the engine on in similar, previous situations. In this study, we not only evaluate the long-term effects of messages on the drivers' intentions, but also examine the impact of different receipts to a message. This is possible because of the retention rates associated with the trucking industry and new drivers, who may or may not have been exposed to a message, taking over a truck in an experimental treatment. Thus, by evaluating the efficacy of the messages at the individual driver level, the study investigates the persistent effects on idling on a driver. While at the same time, conducting the analysis at the truck level, it is possible to examine the overall reduction in idling. Given the findings of the studies, our studies take the next step in helping the organization utilize normative messages to promote VPBE. An added advantage of using messages is the possibility of setting up initiatives at very low costs.

Social norms are informal beliefs about how individuals should behave as a group or within a society (Küchle et al., 2008; Lewis, 1969). Social norms can be categorized into two sub-classes,

descriptive norms and injunctive norms (Cialdini et al., 1991). Descriptive norms characterize “the perception of what most people do,” while an injunctive norm characterizes “the perception of what most people approve or disapprove” (Cialdini et al., 1991 p. 203). Therefore, while descriptive norms will refer to a common behavior that is observed, injunctive norms point to what ought to be done (Cialdini et al., 1990). Researchers have found that pro-environmental actions are driven by a consideration of what might be right or wrong for the community or the environment, and are governed by the normative model (Cialdini et al., 1990; Guagnano, 2001; Nordlund & Garvill, 2002). Social norms can play a major role in influencing and changing individual behavior (e.g. Cialdini et al., 1991,1990; Schultz et al., 2008, 2007). Schade and Schlag, (2003) found that social norms were related to the public acceptability of the transportation pricing strategies. Looking into the impact of pro-environmental behaviors, Ramayah et al., (2012) found that social norms contributed to recycling behavior.

The focus theory of normative conduct states that social norm can dictate the individual decision-making process, particularly when the issue is made the salient or focal point (Cialdini et al., 1990; Kallgren et al., 2000). Saliency for an issue can be increased by persuasive normative messages (Cialdini, 2003; Schultz et al., 2008, 2007). The persuasive abilities of social normative influences are often under-valued because the influence is under-detected (Nolan et al., 2008). The influencing power of descriptive norms stems from the ability to convey to the individual what others are doing, while injunctive norms specify to an individual what is required to be done (Cialdini et al., 1991,1990).

Comparisons between the two classes of social norms indicate that often times, injunctive norms are more effective in influencing behavior (Cialdini et al., 2006; Cialdini, 2003). In fact, in certain situations descriptive framing was found to lead to an increase in the undesirable act (Cialdini et al., 2006; Cialdini, 2003). Focus theory can explain this boomerang effect by stating that the descriptive

framing provides a standard to be met for many individuals. Thus, while information presented using descriptive framing may help decrease the undesirable behavior among the individuals who were above the standard, it has the negative effect of prompting individuals below the standards to increase the extent of undesired activity. An injunctive framing, on the other hand, makes it explicit to the individual about approved behavior of conduct. Injunctive messages have, therefore, been found more potent at influencing pro-environmental behavior (Cialdini & Goldstein, 2004). Social norms have been used in framing messages to promote a myriad of pro-environmental behaviors such as water conservation among hotel guests (Schultz et al., 2008; Goldstein et al., 2008), advocating pro-environmental behavior in national parks (Cialdini et al., 2006), energy conservation, (Nolan et al., 2008; Schultz et al., 2007) and recycling (Bratt, 1999).

In the context of this study, a pro-environmental message scripted using the tenets of injunctive framing will inform the driver about the company's approval towards idling as it helps protect the environment. An injunctive framing will therefore result in drivers exhibiting lower idle times because a clear pro-environmental message is sent to the driver. When it comes to descriptive framing, the literature points to a boomerang effect. Based on previous literature and the fact that typically more than 50% of the drivers exhibited lower than average idling, we hypothesize that the message will have a positive effect. In other words, pro-environmental messages scripted using descriptive norms will be effective in reducing idling. Moreover, as the same driver keeps receiving the same messages over time, the behavioral change will be temporary as the driver reverts to previous idling behavior.

**H1a:** An injunctive norm pro-environmental message will have a positive effect of reducing idling.

**H1b.** The drop in idling due to an injunctive norm pro-environmental message will be short lived as drivers revert to previous idling habits.

**H2a:** A descriptive norm message will have a positive effect of reducing idling

**H2b.** The drop in idling due to descriptive norm message will be short lived as drivers revert to previous idling habits.

The VPBE literature highlights personal norms as an important contributor to individual behavior. In many instances, personal norms have been found to overshadow the effects of social norms (Klößner & Blöbaum, 2010; Klößner, & Matthies, 2004). The norm activation model (NAM) highlights the role of personal norms in changing behavior (Schwartz, 1977). As per this model, an individual's moral obligations may be used for predicting behavior. These moral obligations are known as personal norms. The NAM states that the two contributing factors for personal participants' playing a role in individual behavior are: 1) the realization that an individual's actions have certain consequences, and 2) the feeling of responsibility that comes with performing such behavior (Schwartz, 1977). The fulfillment of the two factors leads to the activation of a personal norm (Schwartz, 1977). Since personal norms stem from personal moral obligations, they play a part in motivating individuals to display pro-environmental behavior (De Groot et al., 2013; Harland et al., 2007,1999). Previous works have focused on the role of personal norms in pro-environmental behavior by making environment friendly decisions regarding transportation choices (Jansson et al., 2011; Klößner & Blöbaum, 2010) and sustainable food choices (Arvola et al., 2008; Dean et al., 2008; Thøgersen & Ölander, 2006)

Studies have found that personal norms can be activated using messages that connect with an individual by using personal pronouns in a moral message (De Groot et al., 2013). By using personal pronouns in messages, De Groot et al. (2013) examined consumer behavior concerning the use of free plastic bags in a grocery store. The authors did not find a significant decrease in the reuse when an injunctive framing was used. The store policy did not allow them to frame a strong message to activate personal norms. Instead of using a message such as "Do you care about the environment," the authors

used a relatively mild activator in the form of a message that said: “We thank you for helping the environment by re-continuing to reuse your bags.” In the context of idling, by stimulating the drivers’ affective beliefs, messages framed using personal norms should lead to the adoption of pro-environmental behavior.

**H3a:** A personal norm pro-environmental message will have a positive effect of reducing idling.

**H3b:** The drop in idling due to a personal norm pro-environmental message will be short lived as drivers revert to previous idling habits.

VPBE intentions have been found to be an influence of social and personal norms on pro-environmental behavior. But, with a small change in context, the messages may be scripted to highlight idling as a pro-organizational behavior. Recall, that social and personal norms are the prevalent norms of society and self. In this study, in addition to messages aimed towards pro-environmental behavior, messages targeted towards pro-organizational behavior are investigated. This manipulation was implemented by changing the foci of messages as idling being advantageous to the organization (pro-organizational) versus beneficial to the environment (pro-environmental). The manipulation for the descriptive framing condition did not have any context other than the number of drivers participating in the lower than average idling. Therefore, only the injunctive and personal norm messages were investigated for compliance with pro-organizational behavior.

The rationale of utilizing pro-organizational messages stems from the organizational citizenship behavior (OCB) literature. OCB is defined as “individual behavior that is discretionary, not directly or explicitly recognized by the formal reward system, and in the aggregate promotes the efficient and effective functioning of the organization” (pp.3, Organ et al., 2005). Discretionary refers to the individual choice in exhibiting the behavior. Therefore, OCB is behavior that is not clearly stated in the

requirements of the job function, but by exhibiting OCB, an employee exceeds what is stated in the job profile (Organ et al., 2005). Employees are not likely to receive rewards for exhibiting OCB, nor are they likely to receive penalties for exhibiting OCB. That being said, managers may notice OCB and consider it during evaluations (Allen & Rush, 1998). In our context, pro-environmental and pro-organizational behaviors are therefore similar since there are no rewards for the employees and both are not part of the work description (Lülfes & Hahn, 2013). Moreover, both are drivers of VPBE (Lülfes & Hahn, 2013). Therefore, utilizing the focus theory of normative conduct and the NAM, if the message activates the pro-organizational benefits of behavior, the employee participation in VPBE is likely to increase.

**H4a:** An injunctive norm pro-organizational message will have a positive effect of reducing idling.

**H4b:** The drop in idling due to an injunctive norm pro-organizational message will be short lived as drivers revert to previous idling habits.

**H5a:** A personal norm pro-organizational message will have a positive effect of reducing idling.

**H5b:** The drop in idling due to a personal norm pro-organizational message will be short lived as drivers revert to previous idling habits.

### **C. Methodology**

A field experiment was conducted to test the efficacy of idling reduction messages scripted according to the norm literature. A common and contract carrier with a license to operate in 48 states within the United States, agreed to participate in the field experiment. The company provides truckload, intermodal, and logistics services to manufacturing, retail, and automotive industries. The majority of the trucks operate in the Southern, Midwestern, and Northeastern United States. The company also provides international services to select provinces in Canada and Mexico. The trucks in the fleet are

fitted with satellite communication devices and fleet management technology. The company managers, therefore, can communicate with the drivers as well as receive the driving statistics. Most of the trucks in the fleet are fitted with auxiliary power units (APU). APUs minimize truck driver idling by changing the power source to an auxiliary source after five minutes of idling.

The fuel manager of the organization was actively involved in our message transmission and data collection efforts. Messages can be transmitted to the onboard satellite conform devices using the unique ID number. The fuel manager can send a message to twenty trucks at a single time using the IDs. Since the fuel manager had to send the messages personally, it was decided to randomly distribute approximately 100 trucks each into the six treatments groups. Before the first message transmission, the fuel manager provided the IDs of the truck in operation during the previous week. The list identified 195 trucks as non-APU trucks. All 195 of the non-APU trucks were first divided randomly into six treatment groups. Then 450 randomly chosen trucks, fitted with APUs, were randomly assigned to the treatment groups. Table 1 shows the random distribution of trucks in the six groups.

**Table 1:** Initial allocation of the trucks to the experimental treatments

	Treatment 1	Treatment 2	Treatment 3	Treatment 4	Treatment 5	Treatment 6
APU	73	80	83	65	67	82
NO APU	37	39	28	34	24	33
Total	110	119	111	99	91	115

Weekly messages, as shown in Table 2, were sent to the truck drivers for 13 consecutive weeks (25th Aug 2016 – 17th Nov 2016). The weekly transmission of messages was scheduled as per the fuel manager's convenience. Ten of the message transmissions took place on Thursday. In three instances the fuel manager was unavailable on Thursday, and so two of the transmissions took place on Friday, and one on Wednesday. Thus, the messages were transmitted on Thursday (+/- one day) for 13 consecutive weeks. One of the authors was always present with the fuel manager when the messages

were transmitted to ensure that the participants received the same messages. Four of the treatment groups received the same injunctive and personal norm framed messages for the entire 13 weeks. While, the participants in the descriptive condition group received a message that was changed to reflect the actual percentage of drivers who displayed idling times lower than the fleet average. This statistic was computed based on the weekly fleet average calculate each Sunday. Finally, the sixth group was the control group and did not receive any messages. During the 13 week duration that the field experiment was conducted the company had between 1152 and 1255 trucks operating each week.

**Table 2:** Weekly message description

<b>Injunctive Environment (IE)</b>	<b>Injunctive Organization (IO)</b>	<b>Descriptive* (D)</b>	<b>Personal Environment (PE)</b>	<b>Personal Organization (PO)</b>
<b>Treatment 1</b>	<b>Treatment 2</b>	<b>Treatment 3</b>	<b>Treatment 4</b>	<b>Treatment 5</b>
At XYZ Transport <b><u>we believe</u></b> that minimizing idling is a worthwhile way to <b><u>help the environment.</u></b>	At XYZ Transport <b><u>we believe</u></b> that minimizing idling is a worthwhile way <b><u>to cut fuel costs.</u></b>	Last week <b><u>63.14 % of our drivers</u></b> had idling times lower than the fleet average.  Please minimize engine idling. - Fuel Manager	By minimizing idling, <b><u>you show</u></b> that you care about helping the <b><u>environment.</u></b>  Please minimize engine idling. - Fuel Manager	By minimizing idling, <b><u>you show</u></b> that you care about <b><u>cutting fuel costs.</u></b>  Please minimize engine idling. - Fuel Manager

\*The descriptive condition received changes statistics every week

#### **D. Data Analysis**

Every Wednesday the aggregate weekly reports from the previous Thursday were downloaded from the fleet management system. In addition to the data from the 13 weeks of weekly intervention, the fuel manager gave us access to 13 weeks of pre-intervention data. The dataset is, therefore, a panel dataset with 13 weeks of pre-intervention and 13 weeks of post-intervention data for each of the trucks included in the field experiment. Also, the Wednesday to Thursday aggregation allowed us to capture

weekly data. However, the dataset is not balanced due to weeks when the trucks were not in operation. The total number of weekly observations was 15,644.

During the normal truck operation, the drivers could change at any time of the week. For instance, in our sample, the maximum number of drivers in one truck over the 26-week interval was 18. Drivers also operated in pairs in some trucks. Hence, there is a possibility that only one of the drivers from a pair would switch. To ensure that the weekly driver statics were correctly matched to the driver who received the message the following steps were taken: 1) We retained observations for the driver or driver pair who were recipients of the first message. As a result, we could rule out the case of the driver switching to another truck in a different period in a later period. 2) We only retained observations for each week, when the same truck driver/driver pair operated all week. Thus, the weekly driving behavior could be accurately matched to one driver or pair of drivers. The data cleansing was done manually, via the process of matching the daily driver logins for the 26-week period using a unique driver code assigned to each driver by the company. Diagram 1 summarizes the criterion for retention of observations. For instance, in truck 1, the same driver or driver pair operated for all 26 weeks, and therefore all 26 weekly observations were included. For trucks 2 and 3, the truck drivers changed. Hence, for truck 2/3 we retained observations from weeks 13-26/2-15. No observations were included from a truck if drivers changed during the week that the message was first transmitted. Our analysis included 11,218 weekly observations from 570 different trucks. The analysis at a minimum retained one week of pre-intervention and one week of post-intervention data for each truck. Seventy-four trucks have been removed from the analysis because they did not have the same driver/pair of drivers during the two-week span that coincided with the first message's transmission. One truck was removed because the truck driver did not wish to be included in the experiment.

**Diagram 1:** Observation retention criterion summary

Weeks	1	2	3	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	24	25	26
Truck 1	Same driver/driver pair																					
Truck 2												Same driver/driver pair										
Truck 3	Same driver/driver pair																					

Discontinuous growth modeling utilizing linear mixed effects analysis is used for the analysis to overcome any issues with observation dependence and unbalanced data sets (Bliese & Polyhart, 2002; Lang & Bliese, 2009). The analysis models individual changes in truck driver behavior into a summarized model for the entire group. Discontinuous growth modeling allows us to measure both intra-truck as well as inter-truck idling changes (Bliese & Lang, 2016; Lang & Bliese, 2009). Recall that the data had been restructured in a manner that the observations from each truck are associated with one driver or, one pair of drivers. Hence, to test the efficacy of the idling reduction messages in our analysis, inter-truck idling behavior captures the differences in idling behavior of the same driver/driver pair. The dependent variable in our analysis is *Percentage Inter – trip Idling<sub>ti</sub>* of truck  $i$  ( $i = 1, 2, \dots, 570$ ), in period  $t$  ( $t = 1, 2, \dots, 26$ ). It is the percentage of time the engine is idling other than for allowable warmups, cool downs, or short stops due to traffic conditions. It was recovered by the fuel manager from the transportation management system fitted onboard the truck. The level 1 model presented in equation 1 captures the change in Percentage Inter-trip idling due to the various predictors. In the model, the linear slopes were allowed to vary randomly across the various trucks for the time periods. This was captured by the level 2 model, equations 2-13, allows for individual differences between trucks. Recall that by virtue of data cleansing, each truck captures the idling behavior of the same driver or driver pair. An unstructured residual covariance structure was specified in the analysis and required no assumption in the error structure.

$$\begin{aligned}
\text{Percentage Inter-trip idling}_{ti} = & \pi_{0i} + \pi_{1i}\text{Time}_{ti} + \pi_{2i}\text{Time}_{ti}^2 + \pi_{3i}\text{Prepost}_{ti} + \\
& \pi_{4i}\text{Shift}_{ti} + \pi_{5i}\text{Treatment}_k + \pi_{6i}\text{Treatment}_k * \text{Shift}_{ti} + \pi_{7i}\text{Treatment}_k * \text{Shift}_{ti} + \\
& \pi_{8i}\text{Distance}_{ti} + \pi_{9i}\text{APU}_i + \pi_{10i}\text{Year}_i + \pi_{11i}\text{Driver}_i + e_{it}
\end{aligned} \tag{1}$$

$$\pi_{0i} = \beta_{00} + \beta_{01}\text{Truck}_i + r_{0i} \tag{2}$$

$$\pi_{1i} = \beta_{10} + \beta_{11}\text{Truck}_i + r_{1i} \tag{3}$$

$$\pi_{2i} = \beta_{20} + \beta_{21}\text{Truck}_i + r_{2i} \tag{4}$$

$$\pi_{3i} = \beta_{30} + \beta_{30}\text{Truck}_i + r_{3i} \tag{5}$$

$$\pi_{4i} = \beta_{40} + \beta_{41}\text{Truck}_i + r_{4i} \tag{6}$$

$$\pi_{5i} = \beta_{50} + \beta_{51}\text{Truck}_i + r_{5i} \tag{7}$$

$$\pi_{6i} = \beta_{60} + \beta_{61}\text{Truck}_i + r_{6i} \tag{8}$$

$$\pi_{7i} = \beta_{70} + \beta_{71}\text{Truck}_i + r_{7i} \tag{9}$$

$$\pi_{8i} = \beta_{80} + \beta_{81}\text{Truck}_i + r_{8i} \tag{10}$$

$$\pi_{9i} = \beta_{90} + \beta_{91}\text{Truck}_i + r_{9i} \tag{11}$$

$$\pi_{10i} = \beta_{100} + \beta_{101}\text{Truck}_i + r_{10i} \tag{12}$$

$$\pi_{9i} = \beta_{110} + \beta_{111}\text{Truck}_i + r_{11i} \tag{13}$$

Intra- and inter-truck idling behavior differences are measured by adding change variables in the model (Bliese & Lang, 2016). The variable *Time* captures that linear change in idling across all treatments from the start of the time period. It is coded 1,2,3.... sequentially up to 26. *Time*<sup>2</sup> captures the quadratic effect of pre-intervention time on idling behavior. The binary variable *Prepost* captures

the differences in idling behavior before and after the idling-reduction messages were transmitted. It is coded 0 for periods prior the intervention (weeks 1 to 13) and 1 for periods after the intervention (weeks 14 to 26). *Prepost* captures the change in the intercept of the model before and after the intervention. The variable *Shift* captures the linear trend in idling behavior post the transmission of the first anti-idling message. It is coded 0 for the period prior to intervention (weeks 1 to 13) and then sequentially from 1 to 13 for weeks after the first message transmission (weeks 14 to 26).

To alienate the effect of the messages on the respective treatments we use an interaction variable. Five dummy variables for trucks in each *Treatment k*, ( $k= 1,2,3,4,5$ ) where, *Treatment1*, IE = 1; *Treatment2*, IO = 2, *Treatment3*, D = 1; *Treatment4*, PE = 1, *Treatment5*, PO = 1, are created with the control group as the base treatment group. These treatment variables capture the differences in idling behavior across all groups. The interaction of the treatment dummy variable and the *Prepost* variable captures the change in intercept for the model pre- and post-intervention for the respective treatment. Specifically, it captures the drop in idling in the treatment group as a result of the messages. The interaction captures the treatment dummy variable, and the *Shift* variable captures the differences in linear trend between the treatment and the control group, post the transmission of the first message. In other words, it captures the recovery back to the previous idling behavior. Idling varies across the months and is related to the outside temperature since it impacts the comfort level inside the cabin. During peak summer and peak winter, idling is known to increase. Due to the unavailability of temperature information, we measure the change in idling behavior in the treatment groups in comparison to the control group. All the variables and the interpretation are shown in Table 3. The analysis was conducted on SPSS (Shek & Ma, 2011).

**Table 3:** Coding and interpretation of change variables in the discontinuous growth model

<b>Variable</b>	<b>Weeks</b>												<b>Interpretation</b>
<b>Time</b>	1	2	3	...	12	13	14	15	...	24	25	26	Linear change from start
<b>Time<sup>2</sup></b>	1	4	9	...	144	169	196	225	...	576	625	676	Quadratic change from start
<b>Prepost</b>	0	0	0	...	0	0	1	1	...	1	1	1	Idling drop from the start of intervention
<b>Shift</b>	0	0	0	...	0	0	1	2	...	11	12	13	Linear change in idling from the start of intervention
<b>Treatment</b>	1	1	1	1	1	1	1	1	1	1	1	1	5 Dummy variables for the 5 treatments with control group as the baseline treatment
<b>Treatment*Prepost</b>	0	0	0	...	0	0	1	1	...	1	1	1	Idling drop in treatment group as compared to control from start of intervention
<b>Treatment*Shift</b>	0	0	0	...	0	0	1	2	...	11	12	13	Linear change in idling of treatment group as compared to control group from the start of intervention

Additional control variables introduced in the analysis are the weekly distance traveled by the trip (Dist). The fuel manager insights agree that there was a negative relationship between idling times and distances, with drivers who were responsible for traveling longer distances idling less to maintain the lead times. A dummy variable for whether the truck was fitted with an auxiliary power unit was also added (No APU = 1) since trucks with APUs would presumably idle less since they had an alternate source of fuel. Finally, a dummy variable for the driver was added (One pair of drivers = 1), to isolate differences in idling behavior between drivers' operating alone and in pairs. The maximum age of the trucks was four years. Hence, a dummy variable for age was added in the analysis. All the trucks over two years old were coded 1. Trucks, which have been in operation longer, will influence the cooling

and heating ability of the air-conditioning and the heaters. Drivers who operated in pairs could take turns and would idle less frequently than trucks driven by single drivers.

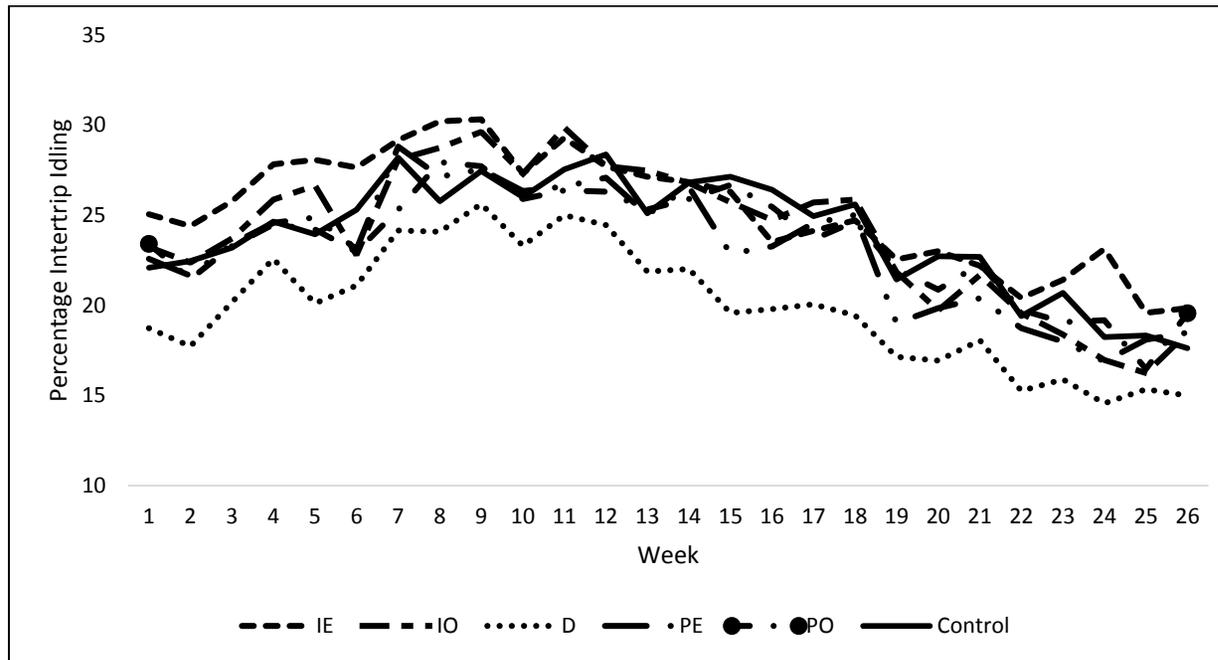
Table 4 presents the mean *Percentage Inter-trip Idling* times, average distances traveled, and the number of trucks across the six groups. The Pearson correlation coefficient for the *Percentage Inter-trip Idling* and distance is -0.187 and is significant at 1% significance level. Diagram 2 shows the average idling times across the 26-week period for all six groups. Even after the random assignment, the descriptive group treatment showed lower idling times due to the greater distances traveled by the trucks in the treatment. Furthermore, the plot indicates a quadratic effect (inverted U) of *Time* with idling increasing across all groups, until week 10-11 and then a decline from group 13-14. Since this is consistent with all groups, it is an artifact of the weather and the temperature pattern.

**Table 4:** Means, Standard Deviations, Number of trucks for each treatment

	<b>IE</b>	<b>IO</b>	<b>D</b>	<b>PE</b>	<b>PO</b>	<b>Control</b>
<b>Percentage Inter-Trip Idling</b>	25.39 (18.06)	24.46 (17.95)	20.02 (16.43)	23.30 (19.42)	23.72 (18.40)	24.28 (17.93)
<b>Distance</b>	2328.19 (1272.4)	2349.03 (1285.32)	2484.75 (1245.17)	2149.92 (1144.33)	2256.68 (1195.50)	2265.65 (1133.39)
<b>No of Trucks</b>	100	102	98	91	74	105

Note: Standard deviation in parenthesis

**Diagram 2:** Mean Percentage Inter-trip Idling times comparison across all treatment groups



Recall that linear mixed effects analysis is used for the computation of the discontinuous growth model. Before the analysis was conducted, an intercept-only model was estimated to compute the inter-class correlation coefficient (ICC) and was found to be 0.781 (Bliese & Lang; 2016). This suggests that 78.1% of the truck driver idling behavior was due to inter-driver differences. A high ICC indicates that discontinuous growth modeling is an appropriate analytical model (De Leeuw & Kreft, 1995). The discontinuous growth model trajectories were then computed sequentially. Variables were added sequentially in six models, and the Chi-square difference for the change in degrees of freedom was used to estimate the model fit. Table 5 indicates the model coefficients. In models 1 and 2, the *Time* and *Time*<sup>2</sup> variables were sequentially added. The linear and quadratic terms were found to be significant, and the model fit statistics indicated a significantly better fit for the quadratic model ( $p < 0.01$ ). The negative coefficient of the quadratic term indicates an inverted U relationship between *Time* and

*Percentage Inter-trip Idling*. This finding is consistent with the initial findings (Diagram 2). Therefore, it was decided to retain both the linear and quadratic terms in the future models.

In the third and fourth models, the change (*Prepost*, *Shift*) and the treatment dummy variables were added sequentially. The variable *Prepost* accesses the change in idling in the pre- and post-intervention weeks while the *Shift* variable captures the change in idling post the first intervention (week 13). The dummy variables measure the difference between the control and treatment groups. When first added, the *Prepost* variable was significant, indicating changes in mean levels of idling across all groups. However, after controlling for the treatment groups, the effect was not significant. The *Shift* variable was significant and negative indicating a steady decline in idling. This was similar to the initial summary in Diagram 2. There were no significant differences between the treatment groups and the base group. In the fifth model, the interaction terms were added to test the effect of the messages on the treatment groups. Finally, in the last model, the control variables, distance, dummy variables for APU, age, and driver were added. Table 5 summarizes the coefficients associated with the predictors introduced into the various models.

**Table 5: Model summary**

	Step 1	Step 2	Step3	Step 4	Step 5	Step 6
Parameter	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)	Estimate (Std. Error)
<b>Intercept</b>	28.93 (0.81)***	23.64 (0.84)***	23.22 (0.86)***	24.03 (1.65)***	23.57 (1.69)***	19.89 (1.15)***
<b>Time</b>	-0.30 (0.03)***	0.65 (0.05)***	0.60 (0.09)***	0.60 (0.09)***	0.60 (0.09)***	0.66 (0.09)***
<b>Time<sup>2</sup></b>		-0.03 (0.00)***	-0.02 (0.01)***	-0.02 (0.01)***	-0.02 (0.01)***	-0.02 (0.01)***
<b>Prepost</b>			-2.20 (0.29)***	-2.20 (0.29)***	-0.91 (0.61)	-0.97 (0.59)
<b>Shift</b>			-0.40 (0.15)***	-0.40 (0.15)***	-0.50 (0.17)***	-0.54 (0.17)***
<b>Treatment1 (IE=1)</b>				0.35(2.24)	1.41 (2.32)	0.39 (1.44)
<b>Treatment2 (IO=1)</b>				0.34 (2.23)	1.16 (2.31)	0.32 (1.43)
<b>Treatment3 (D=1)</b>				-3.77 (2.25)*	-3.49 (2.34)	-2.19 (1.45)
<b>Treatment4 (PE=1)</b>				-1.32 (2.29)	-0.96 (2.38)	-1.89 (1.47)
<b>Treatment5 (PO=1)</b>				-0.51 (2.43)	-0.29 (2.53)	0.70 (1.56)
<b>Treatment1xPrepost</b>					-3.15 (0.85)***	-3.32 (0.83)***
<b>Treatment1xShift</b>					0.27 (0.12)**	0.27 (0.11)**
<b>Treatment2xPrepost</b>					-1.28 (0.83)	-1.38 (0.81)
<b>Treatment2xShift</b>					0.03 (0.11)	0.03 (0.11)
<b>Treatment3xPrepost</b>					-1.62 (0.84)**	-1.78 (0.82)**
<b>Treatment3xShift</b>					0.19 (0.11)*	0.19 (0.11)*
<b>Treatment4xPrepost</b>					-0.71 (0.86)	-0.68 (0.84)
<b>Treatment4xShift</b>					0.04 (0.12)	0.04 (0.11)
<b>Treatment5xPrepost</b>					-0.87 (0.92)	-1.26 (0.90)
<b>Treatment5xShift</b>					0.09 (0.12)	0.11 (0.12)
<b>Distance</b>						0.002 (0.00)***
<b>APU (No APU=1)</b>						4.81 (1.70)***
<b>Year (&gt;2 years=1)</b>						23.88 (1.80)***
<b>Driver (2 drivers = 1)</b>						-3.20 (1.00)***
<b>2 Log Likelihood</b>	81121.19	80701.68 X2(1) = 419.51 ***	80619.09 X2(2) = 82.59***	80614.37 X2(5) = 4.73	80596.05 X2(10) = 18.31 **	79560.12 X2(4) = 1035.93***

## E. Results

The reduction in the log likelihood fit of Model 7 and the significant  $\chi^2$  changes ( $p < .01$ ) based on the difference in the degrees of freedom of the model indicates that it provides the best fit to the data. Therefore Model 7 with all the predictors is used to present the results of the analysis. In Model 7, all of the control variables were significant and associated in the right direction. Distance was found to be negatively related to idling in all the conditions ( $p < 0.01$ ). The presence of APU on the truck was negatively related to idling ( $p < 0.01$ ). The age of the truck was positively related to idling ( $p < 0.01$ ). Finally, drivers who operated in pairs idled less than the drivers who worked alone ( $p < 0.01$ ).

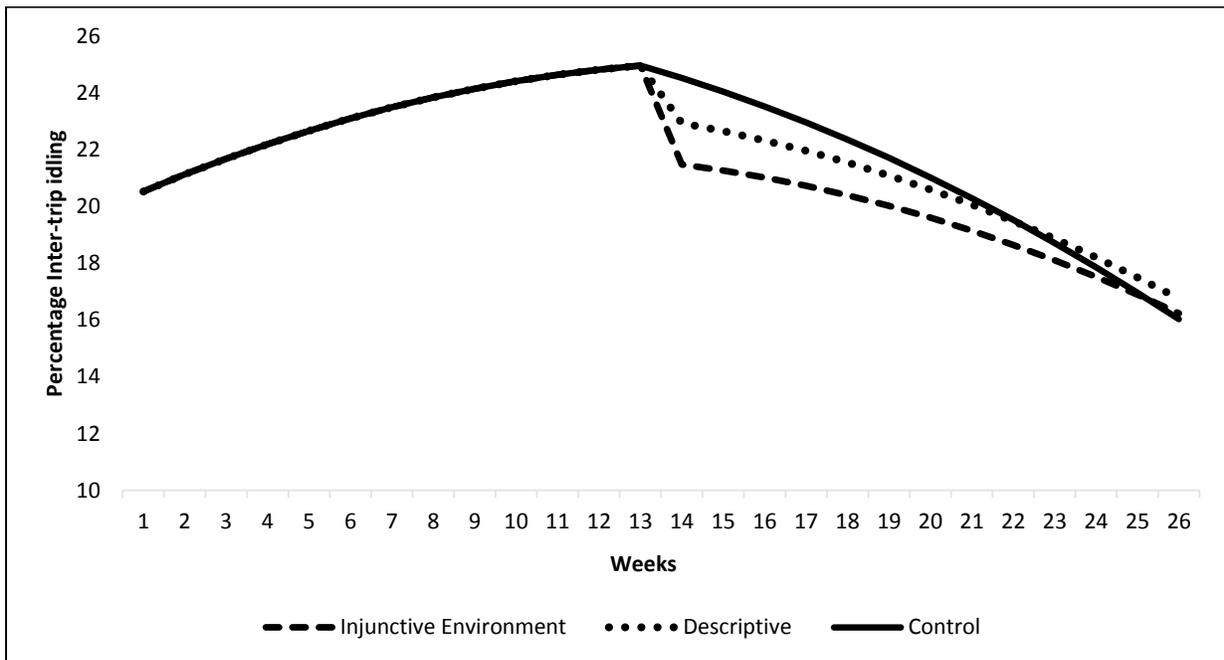
The effect of the message was found to be significant for two treatment groups, IE and D. For the IE group, the coefficient of the interaction variable, *Treatment1xPrepost* was negative. It can be interpreted to mean that the mean idling for the IE group was 3.32% lower than the control group ( $p < .01$ ). The coefficient of the dummy variable, *Treatment1xShift* was positive hinting that the IE treatment group exhibited a linear change in idling as compared to the control group. The positive sign associated with variable indicates that the idling behavior gradually was similar to the idling behavior from the control group ( $p < .05$ ). Thus, hypotheses 1a and 1b were supported. For the D treatment, the coefficient of the interaction variable, *Treatment3xPrepost* was negative, and it shows that post intervention, the mean idling for the treatment group was 1.62% lower than the control group ( $p < .05$ ). There was also marginal significance to the *Treatment3xShift* variable, indicating that with time the idling behavior of the descriptive group resembled the behavior from the control group ( $p < .10$ ). Thus, hypotheses 2a and 2b were supported. However, there was no effect of PE, IO and PO framing. Hence hypotheses 3a, 3b, 4a, 4b, 5a, and 5b were not supported.

## **F. Discussion**

The controlled field experiment with random assignment provides insights into the use of normative messages to influence drivers to reduce idling. The study has important implications for the use of normative messages in VPBE. Recall that VPBE is voluntary and non-incentivized. Thus, the insights from the research apply to organizations attempting to motivate employees to adopt VPBE. First, the study finds that social norms are more effective at influencing truck driver behavior than personal norms. While the literature has strongly advocated including the personal norms in the VPBE framework, the study points out that employees will be motivated to change behavior based on the social norms. Behavioral changes to conform to the social norms are indicative of the modifying behavior to the expectations of others (Biel & Thøgersen, 2007). While this may be contrary to the VPBE framework, which highlights personal norms as driving employee behavior, these may be tied together by the understanding that social norms influence the personal norms (Bamberg & Möser, 2007; Lülfs & Hahn, 2014, 2013). In this category, the change in idling behavior in response to the injunctive pro-environmental norms shows the driver's inclination to align behavior with the accepted behavior to help the environment. The success of the descriptive pro-environmental messages is consistent with the notion of drivers trying to conform behavior to stay within the other drivers. Even though the theoretical rationale for the success of the two types of the message utilizing social norm is different, under the broader schema they findings highlight that employees are more influenced to VPBE by focusing on the need to conform behavior to other employees. These messages can be scripted by stating the pro-environmental expectations that the organization has from its employees (injunctive) or, by providing a standard that serves as a measure of the prevent behavior among the other employees. It must be noted here that the messages presented the

actual percentage number of drivers who idled less than the fleet average. This number was between 61.7% and 69.7%. This consideration should be kept in mind when evaluating the success of the descriptive norm messages. There is a likelihood that transmitting a message that reported elevated levels of idling might have influenced the truck drivers in the opposite direction, as a result of the boomerang effect (Cialdini et al., 2006; Cialdini, 2003).

**Table 3:** Treatment effects of the IE and D messages at the truck driver level



However, the persistence of the effects of messaging is found to reduce with time. The field experiment did not measure the participants' perceived intentions post receipt of the message. Indeed it might be plausible that the intentions had dropped due to the messages, but the behavior did not reflect the change. The message fatigue is probably because the truck driver habits take over after the same message is received every week by the drivers (Klößner & Matthies, 2004). Using a stimulus to undo a habit has been found easier when the situational contexts remain the same (Wood et al., 2005). A truck driver who is constantly on the move faces drastically different environments each time a situation to idle arises. Thus, when the

messages are first received they are persuasive to change the actual idling behavior. However, with continued receipt of the message and continuously changing environments, the messages lose their salience, and the effectiveness of the messages is lost.

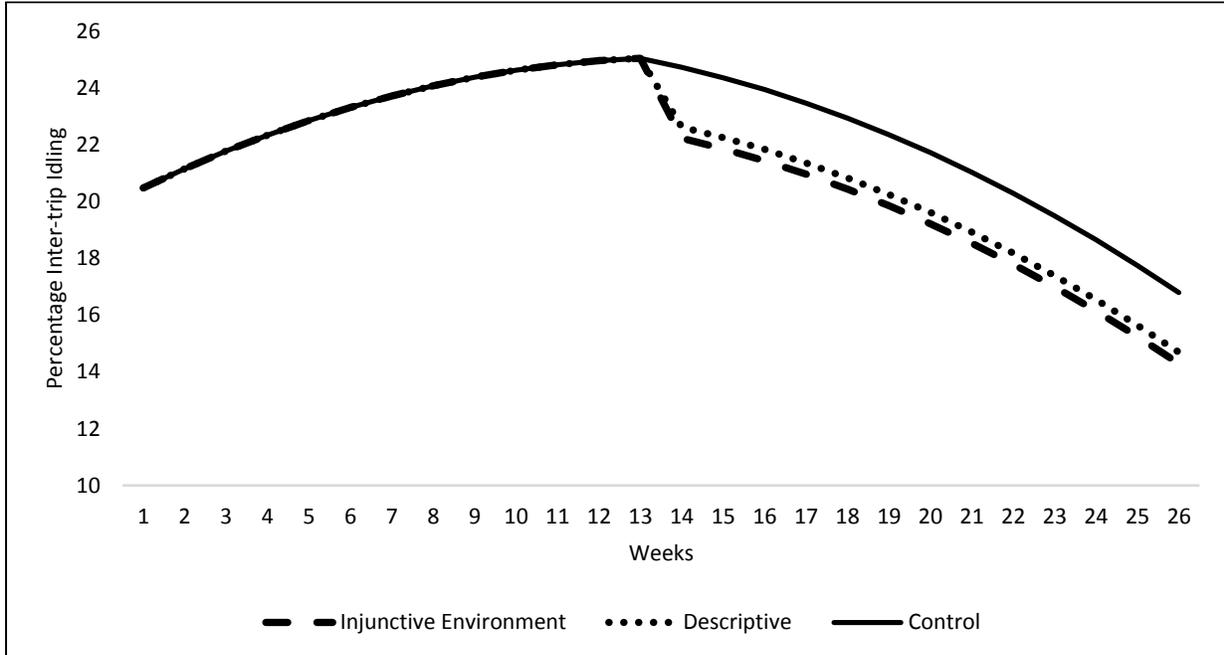
An interesting finding is the lack of pro-organizational messages to influence the truck drivers. Because OCBs were hypothesized as the rationale behind the success of the messages, this finding might be a consequence of the context. While the study did not capture any measures of organizational OCB or organizational turnover, the general industry trend of high turnover among truck drivers is reflective of the sample displaying lower measures of OCB. Lower OCB is linked with higher turnover intentions (Chen et al., 1998). The job function has been found to impact OCB behavior (Farh et al., 2001). Managers and non-managers have different attitude and intentions and these should in turn guide pro-organizational behavior. An employee's organizational commitment is positively related to OCB (Shore & Wayne, 1993). Moreover, in the truck driver context, organizational commitment has also been found to be negatively related to turnover (Pallié, et al., 2011). Overall, the findings demonstrate that truck drivers are more likely to have lower organizational commitment than managers who display OCB (Boiral, 2009). The lower commitment might be a possible reason for the failure of pro-organizational messages to reduce idling.

Experimental studies need to consider the Hawthorne effects, that is the possible changes of the results due to the experimental subjects recognizing the changes that they are being studied (Landsberger, 1958). However, since three hypotheses are not supported, the chances of a Hawthorne effect resulting in the findings are quite low. Another limitation is the extent to which it might be argued that the descriptive norm could be perceived as pro-environmental or

pro-organizational. While this is a limitation, it does in no manner dilute our findings or the implications.

The same linear mixed analysis approach was also used to generate a continuous growth model at the truck level. The analysis included 15,644 weekly observations from the 645 trucks. This data was also not balanced since the trucks were not necessarily in operation each week for the data collection period. The analysis did not control for the individual trucks drivers. The ICC was 69.87 %. In this analysis, the effects of the injunctive environment and the descriptive messages were found to persist over time. Table 4 shows the idling behavior when the data is analyzed at the truck level. This captures the behavior of multiple driver behaviors in one truck in many instances. The persistence of the messages has important implications for practice. The possible explanation for this observation is the fact that as each new truck driver receives the message, they change the behavior in response the message. Before the effects of the message can fade away, a different truck driver operates the truck and subsequently changes behavior. Therefore, the average idling captured is the summation of idling behaviors of the various drivers in the truck. This finding suggests that switching between kinds of messages might be an effective way to motivate employees to participate in VPBE. This also leads to a possibility of future research. If different messages ensure that the shift in behavior after receiving messages persists over time or even deviates in a positive manner then, VPBE can be influenced utilizing messages. As such, in our context the organizational implications of sending IE and D messages to reduce idling are positive. Even though the messages lose their efficacy over time as driver revert to their old habits, the driver turnaround ensures that new drivers are the recipient of the messages. The same analysis was carried out after filtering out weekly observations that had same drivers in two trucks (15,620 observations), and revealed similar results.

**Table 4:** Treatment effects of the IE and D messages at the truck level



## G. Conclusion

Studies have reported mixed findings on the long-term effects of messaging on behavioral change (Asensio & Delmas, 2016; Berenedo et al., 2014). In the context of truck idling, this research endeavor establishes the role of normative messages in reducing truck idling. This behavior is termed as VPBE since it is not mandated by the organization and is not under an incentive scheme. Injunctive pro-environmental message and descriptive messages were found to be effective at reducing idling. However, with time the efficacy of the messages was diminished as the drivers reverted to old habits. On the other hand, at the organizational level, there were benefits of this experiment. Because of the turnaround of drivers and new drivers being the targets of the messages, the group effects of the messages were significant and not diminishing. While this can be an artifact of the sample, the conclusion based on random group assignment and the experimental principles is that a trucking company with a turnaround should be able to get significant effects of such a program.

## H. References

- Allcott, H., & Rogers, T. (2013). The short-run and long-run effects of behavioral interventions: Experimental evidence from energy conservation. *NBER Working Paper, 18492*
- Allen, T. D., & Rush, M. C. (1998). The effects of organizational citizenship behavior on performance judgments: A field study and a laboratory experiment. *Journal of Applied Psychology, 83*(2), 247-260.
- Aragón-Correa, J. A., Matias-Reche, F., & Senise-Barrio, M. E. (2004). Managerial discretion and corporate commitment to the natural environment. *Journal of Business Research, 57*(9), 964-975.
- Arvola, A., Vassallo, M., Dean, M., Lampila, P., Saba, A., Lähteenmäki, L., & Shepherd, R. (2008). Predicting intentions to purchase organic food: The role of affective and moral attitudes in the theory of planned behaviour. *Appetite, 50*(2), 443-454.
- Asensio, O. I., & Delmas, M. A. (2016). The dynamics of behavior change: Evidence from energy conservation. *Journal of Economic Behavior & Organization, 126, Part A*, 196-212.
- Bamberg, S., & Möser, G. (2007). Twenty years after hines, hungerford, and tomara: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology, 27*(1), 14-25.
- Bansal, P. (2005). Evolving sustainably: A longitudinal study of corporate sustainable development. *Strategic Management Journal, 26*(3), 197-218.
- Bansal, P. (2003). From issues to actions: The importance of individual concerns and organizational values in responding to natural environmental issues. *Organization Science, 14*(5), 510-527.
- Bernedo, M., Ferraro, P. J., & Price, M. (2014). The persistent impacts of norm-based messaging and their implications for water conservation. *Journal of Consumer Policy, 37*(3), 437-452.
- Biel, A., & Thøgersen, J. (2007). Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behaviour. *Journal of Economic Psychology, 28*(1), 93-112.
- Bliese, P. D., & Lang, J. W. (2016). Understanding relative and absolute change in discontinuous growth models: Coding alternatives and implications for hypothesis testing. *Organizational Research Methods, 19*(4), 562-592.
- Bliese, P. D., & Ployhart, R. E. (2002). Growth modeling using random coefficient models: Model building, testing, and illustrations. *Organizational Research Methods, 5*(4), 362-387.

- Boiral, O. (2007). Corporate greening through ISO 14001: A rational myth? *Organization Science*, 18(1), 127-146.
- Boiral, O. (2009). Greening the corporation through organizational citizenship behaviors. *Journal of Business Ethics*, 87(2), 221-236.
- Bradler, C., Dur, R., Neckermann, S., & Non, A. (2016). Employee recognition and performance: A field experiment. *Management Science*, 62(11), 3085-3099.
- Bratt, C. (1999). The impact of norms and assumed consequences on recycling behavior. *Environment and Behavior*, 31(5), 630-656.
- Cantor, D. E., Morrow, P. C., & Montabon, F. (2012). Engagement in environmental behaviors among supply chain management employees: An organizational support theoretical perspective. *Journal of Supply Chain Management*, 48(3), 33-51.
- Carrico, A. R., & Riemer, M. (2011). Motivating energy conservation in the workplace: An evaluation of the use of group-level feedback and peer education. *Journal of Environmental Psychology*, 31(1), 1-13.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Chen, X., Hui, C., & Sego, D. J. (1998). The role of organizational citizenship behavior in turnover: Conceptualization and preliminary tests of key hypotheses. *Journal of Applied Psychology*, 83, 922-931.
- Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, 12(4), 105-109.
- Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence*, 1(1), 3-15.
- Cialdini, R. B., & Goldstein, N. J. (2004). Social influence: Compliance and conformity. *Annu.Rev.Psychol.*, 55, 591-621.
- Cialdini, R. B., Kallgren, C. A., & Reno, R. R. (1991). A focus theory of normative conduct: A theoretical refinement and reevaluation of the role of norms in human behavior. *Advances in Experimental Social Psychology*, 24, 201-234.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026.

- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (2004). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Readings about the Social Animal*, New York: Worth Publishers, 56-79.
- Cohn, A., Fehr, E., & Goette, L. (2014). Fair wages and effort provision: Combining evidence from a choice experiment and a field experiment. *Management Science*, 61(8), 1777-1794.
- Croson, R., & Treich, N. (2014). Behavioral environmental economics: Promises and challenges. *Environmental and Resource Economics*, 58(3), 335-351.
- De Groot, J. I., Abrahamse, W., & Jones, K. (2013). Persuasive normative messages: The influence of injunctive and personal norms on using free plastic bags. *Sustainability*, 5(5), 1829-1844.
- De Leeuw, J., & Kreft, I. G. (1995). Questioning multilevel models. *Journal of Educational and Behavioral Statistics*, 20(2), 171-189.
- Dean, M., Raats, M. M., & Shepherd, R. (2008). Moral concerns and consumer choice of fresh and processed organic Foods<sup>1</sup>. *Journal of Applied Social Psychology*, 38(8), 2088-2107.
- Dowell, G., Hart, S., & Yeung, B. (2000). Do corporate global environmental standards create or destroy market value? *Management Science*, 46(8), 1059-1074.
- Englmaier, F., Roider, A., & Sunde, U. (2016). The role of communication of performance schemes: Evidence from a field experiment. *Management Science*.
- Farh, L. J., Zhong, C., & Organ, D. W. (2001). Organizational context and employee citizenship behavior in the PRC: Impact of job function, managerial level, and organization ownership. Paper presented at the meeting of the Academy of Management, Washington, DC.
- Goldstein, N. J., Cialdini, R. B., & Griskevicius, V. (2008). A room with a viewpoint: Using social norms to motivate environmental conservation in hotels. *Journal of Consumer Research*, 35(3), 472-482.
- Gonzalez, P., Sarkis, J., & Adenso-Diaz, B. (2008). Environmental management system certification and its influence on corporate practices: Evidence from the automotive industry. *International Journal of Operations & Production Management*, 28(11), 1021-1041.
- Guagnano, G. A. (2001). Altruism and market-like behavior: An analysis of willingness to pay for recycled paper products. *Population & Environment*, 22(4), 425-438.
- Harland, P., Staats, H., & Wilke, H. A. (1999). Explaining proenvironmental intention and behavior by personal norms and the theory of planned behavior<sup>1</sup>. *Journal of Applied Social Psychology*, 29(12), 2505-2528.

- Harland, P., Staats, H., & Wilke, H. A. (2007). Situational and personality factors as direct or personal norm mediated predictors of pro-environmental behavior: Questions derived from norm-activation theory. *Basic and Applied Social Psychology*, 29(4), 323-334.
- Haugh, H. M., & Talwar, A. (2010). How do corporations embed sustainability across the organization? *Academy of Management Learning & Education*, 9(3), 384-396.
- Heras-Saizarbitoria, I., & Boiral, O. (2013). ISO 9001 and ISO 14001: Towards a research agenda on management system standards. *International Journal of Management Reviews*, 15(1), 47-65.
- Hopper, J. R., & Nielsen, J. M. (1991). Recycling as altruistic behavior normative and behavioral strategies to expand participation in a community recycling program. *Environment and Behavior*, 23(2), 195-220.
- Idle Reduction A Glance at Clean Freight Strategies. Retrieved from <https://www.epa.gov/sites/production/files/2016-06/documents/420f16025.pdf>
- Jansson, J., Marell, A., & Nordlund, A. (2011). Exploring consumer adoption of a high involvement eco-innovation using value-belief-norm theory. *Journal of Consumer Behaviour*, 10(1), 51-60.
- Jones, D. A., Willness, C. R., & Madey, S. (2014). Why are job seekers attracted by corporate social performance? experimental and field tests of three signal-based mechanisms. *Academy of Management Journal*, 57(2), 383-404.
- Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin*, 26(8), 1002-1012.
- Kaptein, M., & Schwartz, M. S. (2008). The effectiveness of business codes: A critical examination of existing studies and the development of an integrated research model. *Journal of Business Ethics*, 77(2), 111-127.
- Klassen, R. D., & McLaughlin, C. P. (1996). The impact of environmental management on firm performance. *Management Science*, 42(8), 1199-1214.
- Klößner, C. A., & Blöbaum, A. (2010). A comprehensive action determination model: Toward a broader understanding of ecological behaviour using the example of travel mode choice. *Journal of Environmental Psychology*, 30(4), 574-586.
- Klößner, C. A., & Matthies, E. (2004). How habits interfere with norm-directed behaviour: A normative decision-making model for travel mode choice. *Journal of Environmental Psychology*, 24(3), 319-327.

- Kube, S., Maréchal, M. A., & Puppea, C. (2012). The currency of reciprocity: Gift exchange in the workplace. *The American Economic Review*, *102*(4), 1644-1662.
- Küchle, G., & Ríos, D. (2008). The grammar of society: The nature and dynamics of social norms, by cristina bicchieri. cambridge and new york: Cambridge university press 2006, xvi 260 pp. *Economics and Philosophy*, *24*(01), 117-123.
- Landsberger, H. A. (1958). Hawthorne revisited: Management and the worker, its critics, and developments in human relations in industry.
- Lang, J. W., & Bliese, P. D. (2009). General mental ability and two types of adaptation to unforeseen change: Applying discontinuous growth models to the task-change paradigm. *Journal of Applied Psychology*, *94*(2), 411.
- Lewis, D. (1969). *Convention: A philosophical Study* Harvard univ. Press, Cambridge,
- Limayem, M., Hirt, S. G., & Cheung, C. M. (2007). How habit limits the predictive power of intention: The case of information systems continuance. *MIS Quarterly*, *31*(4), 705-737.
- Lindenberg, S., & Steg, L. (2007). Normative, gain and hedonic goal frames guiding environmental behavior. *Journal of Social Issues*, *63*(1), 117-137.
- Lülf, R., & Hahn, R. (2013). Corporate greening beyond formal programs, initiatives, and systems: A conceptual model for voluntary pro-environmental behavior of employees. *European Management Review*, *10*(2), 83-98.
- Lülf, R., & Hahn, R. (2014). Sustainable behavior in the business sphere: A comprehensive overview of the explanatory power of psychological models. *Organization & Environment*, *27*(1), 43-64.
- McGuire, D., & Garavan, T. N. (2010). Closing comments: A call to action. *Advances in Developing Human Resources*, *12*(5), 614-616.
- Nolan, J. M., Schultz, P. W., Cialdini, R. B., Goldstein, N. J., & Griskevicius, V. (2008). Normative social influence is underdetected. *Personality & Social Psychology Bulletin*, *34*(7), 913-923.
- Nordlund, A. M., & Garvill, J. (2002). Value structures behind proenvironmental behavior. *Environment and Behavior*, *34*(6), 740-756.
- Organ, D. W., Podsakoff, P. M., & MacKenzie, S. B. (2005). *Organizational citizenship behavior: Its nature, antecedents, and consequences* Sage Publications.
- Paillé, P., Fournier, P., & Lamontagne, S. (2011). Relationships between commitments to the organization, the superior and the colleagues, and the intention to leave among truckers. *International Journal of Organizational Analysis*, *19*(2), 92-108.

- Rahman, S. M. A., Masjuki, H. H., Kalam, M. A., Abedin, M. J., Sanjid, A., & Sajjad, H. (2013). Impact of idling on fuel consumption and exhaust emissions and available idle-reduction technologies for diesel vehicles – A review. *Energy Conversion and Management*, 74, 171-182.
- Ramayah, T., Lee, J. W. C., & Lim, S. (2012). Sustaining the environment through recycling: An empirical study. *Journal of Environmental Management*, 102, 141-147.
- Russo, M. V., & Harrison, N. S. (2005). Organizational design and environmental performance: Clues from the electronics industry. *Academy of Management Journal*, 48(4), 582-593.
- Schade, J., & Schlag, B. (2003). Acceptability of urban transport pricing strategies. *Transportation Research Part F: Traffic Psychology and Behaviour*, 6(1), 45-61.
- Schultz, W. P., Khazian, A. M., & Zaleski, A. C. (2008). Using normative social influence to promote conservation among hotel guests. *Social Influence*, 3(1), 4-23.
- Schultz, P. W., Nolan, J. M., Cialdini, R. B., Goldstein, N. J., & Giskevicius, V. (2007). The constructive, destructive, and reconstructive power of social norms. *Psychological Science*, 18(5), 429-434.
- Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology*, 10, 221-279.
- Shancita, I., Masjuki, H. H., Kalam, M. A., Rizwanul Fattah, I. M., Rashed, M. M., & Rashedul, H. K. (2014). A review on idling reduction strategies to improve fuel economy and reduce exhaust emissions of transport vehicles. *Energy Conversion and Management*, 88, 794-807.
- Shankar, M & Foster, L. Behavioral insights at the United Nations. 2016
- Shek, D. T., & Ma, C. M. (2011). Longitudinal data analyses using linear mixed models in SPSS: Concepts, procedures and illustrations. *The Scientific World Journal*, 11, 42-76.
- Shore, L. M., & Wayne, S. J. (1993). Commitment and employee behavior: Comparison of affective commitment and continuance commitment with perceived organizational support. *Journal of Applied Psychology*, 78(5), 774.
- Sroufe, R. (2003). Effects of environmental management systems on environmental management practices and operations. *Production and Operations Management*, 12(3), 416.
- Stern, P. C. (2000). New environmental theories: Toward a coherent theory of environmentally significant behavior. *Journal of Social Issues*, 56(3), 407-424.
- Thøgersen, J., & Ölander, F. (2006). The dynamic interaction of personal norms and Environment-Friendly buying behavior: A panel Study1. *Journal of Applied Social Psychology*, 36(7), 1758-1780.

Verplanken, B., & Wood, W. (2006). Interventions to break and create consumer habits. *Journal of Public Policy & Marketing*, 25(1), 90-103.

Wood, W., Tam, L., & Witt, M. G. (2005). Changing circumstances, disrupting habits. *Journal of Personality and Social Psychology*, 88(6), 918-933.

## I. Appendix: IRB



Office of Research Compliance  
Institutional Review Board

December 13, 2016

### MEMORANDUM

TO: Saif Mir  
John Aloysius

FROM: Ro Windwalker  
IRB Coordinator

RE: PROJECT CONTINUATION & MODIFICATION

IRB Protocol #: 15-10-260

Protocol Title: *Effects of Normative Messages in Promoting Environmental Management Practices*

Review Type:  EXEMPT  EXPEDITED  FULL IRB

Previous Approval Period: Start Date: 11/23/2015 Expiration Date: 11/22/2016

New Expiration Date: 11/22/2017

Your request to extend and modify the referenced protocol has been approved by the IRB. If at the end of this period you wish to continue the project, you must submit a request using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. Failure to obtain approval for a continuation on or prior to this new expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

**This protocol has been approved for 3,000 total participants.** If you wish to make any modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior* to implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or [irb@uark.edu](mailto:irb@uark.edu).

## **IV. Chapter 4**

### **A. Introduction**

Sustainable supply chain management (SSCM) seeks to adopt and implement practices for attaining organizational environmental and social goals while ensuring the long-term economic performance (Carter & Rogers, 2008). In order to do so, firms take on SSCM projects working collaboratively with their supply chain partners (Grekova et al. 2016; Gimenez & Tachizawa, 2012; Seuring & Muller, 2008). While organizational power may also be used to promote inter-firm SSCM projects, such binding requests are often not accepted wholeheartedly by the partners (Brockhaus et al., 2013; Zhu & Sarkis, 2007). Since SSCM initiatives require that the firms do not lose out on the economic front, it is logical to assume that the decision to adopt an initiative is after careful evaluation of the economic, environmental, and social tradeoffs. In the context of SSCM, it is often the supply chain management (SCM) professionals who evaluate the tradeoffs (Cantor et al., 2012, 2013). At the intra-firm level, incentive systems, employee training, and supervisory support are factors that motivate the workforce to take on sustainability initiatives (Cantor et al., 2012; Daily & Huang, 2001). Since inter-firm SSCM projects require the approval from a SCM professional from a different organization, the first hurdle lies in ensuring that the SCM professional considers the project viable enough to evaluate the tradeoffs. While effective communication is a critical component of implementing such collaborative SSCM projects (Schultz & Wehmeier, 2010; Signitzer & Prexl, 2007), the literature has overlooked how sustainability communications should be framed to influence SCM managers to cross the first hurdle by getting the SCM professional interested in the initiatives. Without this nudge to the SCM professional to delve deeper and examine the sustainability initiative more closely, these projects will die without even taking off. Therefore, it is important to understand

how to present a sustainability proposition to a supply chain partner in a manner such that they are intrigued enough to discuss the initiative within the organization. This research endeavor examines the framing of sustainability communication utilizing the concepts of information framing to influence the persuasiveness of communication (Levin et al., 1998). Thus, it provides practical insights for SCM practitioners working to embed sustainability practices into their supply chains by collaborating with their partners on the emphasis of the aspects of initiatives that should be presented and the manner of framing the project to influence the communication recipient.

Inter-firm communication is the dynamic process that can affect organizational decision-making by the communication exchange that shapes the individual's understanding of the phenomenon (Ashcraft et al., 2009, Cornelissen et al., 2015). Communication framing involves emphasizing on certain focal issues so as to make it salient to the communication recipient, thereby influencing the recipients' subsequent perceptions or behavior (Entman, 1993). These have also been studied as "framing effects" (Levin et al., 1998). Goal framing is a framing effect in which individuals' intentions are influenced via framing communication in a manner such that it highlights the attainments of gains by working on the behavior (positive framing) or, foregoing gains by not working on the behavior (negative framing) (Levin et al., 1998). Thus, framing effects can be beneficial in inter-firm communication to persuade the message recipient to get interested in the SSCM projects. In this behavioral research endeavor, a vignette-based study examines the student participant as they role-play as supply chain professionals intending to discuss a sustainability initiative within their organization, when asked to by a downstream retailer. The dependent variable, intention to discuss an initiative, is a behavior that has minimal effort and cost implications as opposed to an intention to implement the project. Therefore the

first hurdle is overcome by ensuring that the message recipient's interest is piqued to discuss the project within their organization. Thus, it is a very conservative test in which the participant has nothing to lose by agreeing to discuss the initiative. But, even in this extremely liberal case, the study revealed differences in intentions to discuss the project based on the framing, which has implications for practice.

The functional role of the message recipient is an important factor that should be considered while studying corporate communication (Corneliseen et al., 2006). In this study, the functional involvement of the SCM manager is manipulated by highlighting sustainability as part of the job description. Thus, while one scenario emphasized the SCM managers' need to focus on both the economic and sustainability benefits, the other scenario highlights the SCM managers need to focus on the operational benefits of the SSCM project. With sustainability fast becoming a part of an organizational manager's role (Visser & Crane, 2010; Williams & Schaefer, 2012), this study, therefore, examined the differences in the persuasive powers of communication based on the organizational job focus of the message recipient. Another manipulation involved highlighting the consequence from the SSCM project as a sustainability benefit versus the cost benefit. The consequences demonstrated in the communication have a significant impact on the individual perceptions (Murdock & Rajagopal, 2016). This manipulation is, therefore, another type of framing. The final vignette administered to the participants was, therefore, a 2 (SCM manager sustainability role involvement) x 2 (Goal framing) x 2 (Consequence) design. The study also examines the effect of fairness by evaluating the within participant reduction in discussion intentions when the participant is asked to share the profits from the technology by reducing prices.

Hence, several research questions are addressed in this study. First, it examines the influential power of communication utilizing the loss or attainment of goals. Second, it conforms how aligning the message consequences with the job responsibilities increase the persuasiveness of sustainability communication. And third, it examines how the SCM actor's intention to discuss the initiative within the organization changes when the supplier's request is deemed unfair.

Due to observed non-normality, non-parametric tests were used to analyze the data. The study findings reveal the importance of considering the job functions of the communication recipient. There are also differences in the efficacy of the goal framing effects and the message consequence. In the vignette-based experiment, participants whose job functions encompassed sustainability were more likely to discuss sustainability initiatives within the company when a negative framing was used. Thus, the prospect of letting go of an opportunity was more influential than the possibility of gaining from an opportunity. Furthermore, it did not matter whether the communication highlighted the cost benefits versus the sustainability benefits from the project. However, when the functional role of the recipient did not involve sustainability, highlighting the organizational consequence was found to positively influence the participant intentions to discuss the initiative within the organization. The goal framing effects, however, were not present in this case and it did not matter whether the recipient was made aware of gaining an opportunity or losing an opportunity. Also, there was a decrease in discussion intentions once the supplier perceived that the buyer was requesting for the implementation of SSCM initiatives for their own business, i.e. the ask was perceived as unfair.

This study focuses on inter-firm sustainability communication and makes several contributions. First, by studying the efficacy of inter-firm communication, this study establishes

the first link of the collaborative proliferation of sustainable activities across the supply chain. The extant literature has studied communications almost exclusively in the B2C context, while studies have acknowledged the need for effective communications and collaboration between firms, what constitutes effective communication is yet to be examined (Brockhaus et al., 2013; Busse et al., 2016; Dach & Allmendinger, 2014; Signitzer & Prexl, 2007). Without motivating the SCM manager to discuss the initiative within the organization the sustainability project does not even have a chance. By gaining a champion for the project within the recipient organization, the likelihood of the success of the sustainability project is increased (Gattiker et al., 2014; Gattiker & Carter, 2010).

Second, as sustainability becomes a salient issue throughout the world, this study provides insights into starting an effective inter-firm sustainability collaboration. The consideration of the functional responsibility of the communication recipient is an important aspect that is often overlooked. Tailoring the communication will result in persuasive communication and subsequently greater chances of success. Finally, the framing literature in the organizational context has overlooked the functional responsibility of the message recipient. Indeed as the study reveals, the effect of framing is contingent upon the responsibilities undertaken by the recipient. By aligning the organizational communication literature and the framing literature, the study advances the theory by highlighting the factors affecting the persuasiveness of communication.

## **B. Theory and Hypotheses Development**

SSCM projects can have a social and environmental impact (Carter & Rogers, 2008). In this study, the SCM professional's intention to adopt a technology that affects the emissions from transport is evaluated. Therefore, the context of the study is green logistics (Murphy and

Poist, 2003). While areas such as green logistics are under the direct control of a firm's decision makers to ensure that they utilize optimal solutions, it has been found that they are implemented more because of a policy concern rather than an environmental concern (Schade & Schade, 2005; Ubeda et al., 2011). Furthermore, since environment management practices (EMP) have been found to have a positive impact on firm performance it makes for a suitable context to manipulate the consequence from adopting an EMP technology (Montabon et al., 2007; Zhu & Sarkis, 2004; Sroufe, 2003; Kassinis & Soteriou, 2003).

Montabon et al. (2007) classified the firm's EMP as operational, strategic, and tactical. Operational EMP are activities, such as recycling, waste reduction: proactive and reactive, packaging, etc., that come under the domain of internal firm operations. Strategic EMP involve the firm's top management framing policies, objectives, and plans to adopt an environment-friendly approach. Some examples of strategic EMP include framing the mission statement, strategic alliances, and employee programs for education and training. Murphy and Poist (2003) suggest that activities such as recycling, reusing materials, and reducing consumption are prominent strategies of firms favoring sustainability practices. The focus of strategic EMP is external. Melnyk et al. (2003) examined the effects of having certified EMP versus an informal system and found that firms perform substantially well through accredited and well-developed EMP. Tactical level practices fall somewhere in between the realms of operational and strategic practices and have a somewhat midway focus on both the internal and external activities. Examples of tactical decisions would include supplier selection, environmental participation, and product development and innovation (Ehrgott et al., 2013; Hazen et al., 2011). In this study, the supplier is asked to adopt an operational EMP that will be within the direct purview of the supplier firm. However, the adoption of the technology will have supply chain repercussions.

Scholars have mostly examined the implementation of a sustainable supply chain initiative at an organizational level (e.g. Busee et al. 2016; Raur & Koffman, 2015). The unit of analysis in this study is the individual. The increased focus on sustainability has prompted researchers to look into the behavioral aspects of employees, which may be crucial for the success of these EMP (Cantor et al., 2012; Sarkis et al., 2010). Cantor et al. (2012) examined a model whereby organizations could sway employee perceptions towards environmental causes by reshaping their internal framework and policies. An individual's commitment to the environment and organizational support and outlook towards sustainability has been found to positively influence employee participation in environmental initiatives (Cantor et al., 2012; Cantor et al., 2013). Internal environmental championing is one of the critical factors in making suppliers develop environmental capabilities (Lee & Klassen 2008). The presence of a project champion has been found to facilitate the adoption of a sustainability initiative within an organization (Gattiker et al., 2014; Gattiker & Carter, 2010). Furthermore, individuals who can link the SSCM initiatives to personal goals and aspirations achieve greater success in influencing other organizational members to adopt the initiatives (Gattiker & Carter, 2010; Winchmen et al., 2016).

Persuasive sustainability communications will increase the chances of the focal actors' organization discussing the sustainability project. Goal framing effect is an accepted communication strategy in the persuasive communication literature (Levin et al., 1998). According to the principles of goal framing an individual's evaluation of a situation is based on the manner that it is presented. A positive framing involves enhancing an issue by focusing on the probable gains received by working on the issue. A negative framing, on the other hand, involves presenting an issue by focusing on the probable gains lost by not working on the issue.

In the context of EMP, a positive framing will involve presenting an initiative by focusing on gaining an opportunity, while a negative framing involves losing an opportunity. Thus, while either type of framing advocates for the adoption of the same initiative, the communicating actor focuses on the potential gain or potential loss of adopting/not adopting the initiative.

The goal framing literature suggests that negative framing is more effective than positive framing, since individuals are in general more motivated to avoid a loss than to attain a gain of similar magnitude (Krishnamurthy et al., 2001; Meyerowitz & Chaiken, 1987). Negative framing has been found to be more influential in highlighting the environmental impact of carbon dioxide emissions between different travel modes (Avineri & Waygood, 2013). At the same time, consumers have reported no difference in attitudes towards brands when sustainable products are presented utilizing positive or negative framing (Olsen et al., 2014). One of the most influential works in the goal framing literature found that women were more likely to undergo breast examinations when the information was presented utilizing negative framing (Meyerowitz & Chaiken, 1987). However, no significant framing effects were found in the context of men's testicular examinations (Steffen et al., 1994). Overall, the studies concerning the impact of goal framing on behavior have found that negative framing is more influential at changing behavior and attitudes (e.g. Ganzach & Karashi, 1995; Loewenstein & Issacharoff, 1994; Tokar et al., 2016). However, there have been different factors that have been associated with the influential power of negative framing. Maheswaran and Meyers-Levy (1990) found that when an individual is more involved with the issue and more detailed processing of the message is required, negative framing is found to be more persuasive. Another rationale for the success of studies finding support for the impact of negative framing is that intrinsic self-relevance is low (Krishnamurthy et al., 2001). High intrinsic self-relevance occurs when the decision-maker can relate to the

decision context. Under these circumstances, when the intrinsic self-relevance is low, and subsequently there is low intrinsic motivation, the framing effects are more nuanced with the negative framing influencing decision-making to a greater extent (Krishnamurthy et al., 2001). In another context of global climate change, negative framing has been found to be more persuasive when the subjects' environmental concern is low (Newman et al., 2012). Moreover, when trying to avoid a negative outcome, negative framing is more influential while on the other hand, when trying to get a positive outcome, positive framing is more influential (Lee & Aaker, 2010). These studies indicate that the context and the individuals' role plays an important role in deciding which framing will be more effective.

Since the issue involvement for the SCM actor involved with sustainability will be high, negative framing should prove beneficial for the discussion intentions. Moreover, for the SCM professionals where sustainability is part of the actors' job description, the framing effects of consequence are not likely to have an effect. This is because based on the job description, the professional should be interested in projects that are directly related to the job responsibility. Thus, irrespective of the consequence highlighted in the message, the sensemaking of the individual will highlight the project as beneficial. As such, the work characteristics and attributes of an actor have been found to influence an actor's behavioral outcomes (Humphrey et al., 2007). In this situation the sustainability involvement of the jobs is hypothesized to influence the intentions to discuss the projects impacting sustainability.

**H 1:** SCM professionals' intention to discuss an SSCM initiative will be positively influenced by negative framing as opposed to positive goal framing.

A sustainability initiative for an organization is often associated with economic benefits (Carter & Rogers, 2008; Kersten et al., 2010; Srivastava, 2007). Thus, a message can also be

scripted focusing on the economic and thereby the organizational benefits of adopting the initiative. The rationale behind differing effects of presenting the consequence is based on the concept of sensemaking (Weick 1995). Sensemaking is utilized by actors to determine their approach towards an issue based on the understanding of the situation (Fiss & Hirsch, 2005; Weick 1995). Sensemaking is the actors' evaluation and comprehension of the issue at hand (Weick 1995). In this study, the SCM actor's job description focusing on sustainability is manipulated. Individual's decision-making is influenced by the job characteristics (Barrick et al., 2013; Rousseau, 1978). The hypothesis is based on the rationale that sensemaking will be influenced by the job responsibility. For an SCM manager whose job description does not involve sustainability, focusing on the economic aspects will have an impact on the decision-making. When the message consequence highlights the costs benefits, the sensemaking process of the SCM actor will ensure that the project is perceived as beneficial. Consequentially, the actor will be more inclined to discuss an initiative when it highlights the costs benefits over the environmental benefits. On the other hand, when the SCM professionals' job requires them to consider the sustainability accepts sensemaking will result in both the organizational as well as the environmental consequences being perceived as relevant. Thus, there will be no difference in intention to discuss the SSCM initiative based on the message consequence. The supply chain actors' job involvement with sustainability will influence the impact of highlighting the consequences such that

**H 2a:** SCM professionals involved with sustainability will be equally influenced by messages highlighting the economic benefits versus environmental benefits.

**H 2b:** SCM professionals not involved with sustainability will be more influenced by messages highlighting the economic benefits versus environmental benefits.

An individual's behavior is also affected by the fairness of processes and procedures (Colquitt & Zipay, 2015; Leventhal, 1980). Procedural justice is the perception that the relationship policies are fair and is associated with the distribution of outcomes (Griffith et al., 2007; Hofer et al., 2012). Perceptions of procedural justice enhance the long-term orientation of the supply chain partners (Griffith et al., 2006, Hofer et al., 2012), truck driver turnover intentions (Cantor et al., 2011), recover buyer trust post disruptions (Wang et al., 2014), and buyer-supplier relationship continuity (Kanyak et al., 2015). Particularly in our context, the SCM professionals' behavior will also be influenced by the fairness of "the ask" by the downstream organization. When the SCM professional perceives that they are being asked to implement the SSCM project, while worthwhile for the organization, the retailers might exploit it for their own purposes and therefore the intention to discuss the implementation will be lowered.

**H 3:** SCM professionals' intention to discuss an SSCM initiative will be negatively influenced by perceptions of fairness.

### **C. Methodology**

Scenario based role-playing (SBRP) vignettes were created and scripted using different theoretical framework, to test the efficacy of messages on the supply chain managers' intention to discuss the adoption of sustainable activities within an organization when asked by a downstream member. Additionally, the vignettes assessed the change in intentions to discuss the adoption of technology once the downstream member made it known that the retailer expected that the cost benefits to be shared with the retailer. SBRP's are appropriate when evaluating managerial preferences and biases in decision-making (Rungtusanatham et al., 2011). The vignettes were created by adhering to the 3-step process recommended by Rungtusanatham et al. (2011). In the first stage, pre-design, the literature was reviewed and practitioner insights were

sought. In the second stage, design, the vignettes were conceived after working through several iterations. Finally, in the third stage, post-design, the vignettes were validated by incorporating feedback from four practitioner and four academic reviewers. Feedback from the reviewers was incorporated into the vignette. The findings from the first study motivated the second study.

A 2 (Role involvement: including sustainability versus only departmental functions) x 2 (Goal framing: Positive versus Negative) x 2 (Consequence: Organizational versus Environmental) vignette-based study was conducted. Participants role-played as account managers in the cereal category of a supplier. The scenario described the account manager being asked to consider investments in a technology to decrease greenhouse emissions by a retailer. The role involvement manipulation was captured by specifying whether or not the sustainability considerations were within the account managers' purview of responsibilities. The goal framing manipulation was accomplished by presenting the information as gaining an opportunity (positive frame), or losing an opportunity (negative frame). Finally, the consequence manipulation specified whether by adopting the technology the decision involved saving costs or reducing greenhouse gas emissions. The effect of fairness was investigated by including a scenario where the supplier was informed that the retailer expected a share of the cost benefits reflected in lowered prices. This was a within participant manipulation. The dependent variable was a 3-item scale capturing the intention to discuss the technology within the organization. To measure the change in intentions, the discussion scales were repeated after the supplier received the message from the retailer asking them to share the costs benefits. The vignette and all the scales are presented in Appendices A and B.

## **Manipulation checks**

A pretest of the vignette was conducted to establish that the manipulations worked as desired. Two hundred, twenty-six American participants (Female = 52.2 %, Average age = 38.8 years) were paid (\$0.20) to participate in an online survey administered on Amazon's mechanical Turk service. The participants were randomly assigned to one of the eight treatments. Table 1 indicates the number of participants in each treatment.

All the scales included in the analysis are shown in Appendix B and were adapted from involvement and message content scales by Maheshwaran and Levy (1990). The job function involvement manipulation was assessed using a 3-item scale (Cronbachs alpha = .85), in which the participants responded concerning the extent in which sustainability was part of decision-making. The participants responded on a scale from 1-7 (1= Financial performance, 7 = Sustainability). The ANOVA highlighted that the participants in the treatment where sustainability was part of decision-making ( $M = 3.86$ ), considered sustainability in their decision-making more than the participants in the treatment where sustainability was not highlighted as part of job description ( $M = 3.45$ ,  $F(1,224) = 5.35$ ,  $p < .05$ ). The manipulation check for the goal framing consisted of four items. A one way ANOVA showed that participants in the positive framing condition found the message to be highlighting the gains ( $M_{\text{Positive}} = 5.53$ ), as opposed to participants in the negative framing condition ( $M_{\text{Negative}} = 4.69$ ,  $F(1,224) = 30.73$ ,  $p < .01$ ). The manipulation checks for the consequence were conducted separately using 3-item scales for the cost benefits (Cronbachs alpha = .87) and environmental benefits (Cronbachs alpha = .93). A one way ANOVA revealed that participants who received messages with the costs benefits ( $M = 5.39$ ) perceived the messages to be highlighting the costs versus participants who received the environmental benefits ( $M = 3.43$ ,  $F(1,224) = 99.32$ ,  $p < .01$ ). Also, participants who received the

environmental benefits message ( $M = 5.76$ ) perceived that the messages highlighted the environmental benefits more than the participants who received the cost benefits ( $M = 4.24$ ,  $F(1,224) = 55.05$ ,  $p < .01$ ). Confounding checks were confirmed to ensure that the job description did not influence participant's perception of the message consequences or goal framing. They were confirmed by a 2-way analysis by including job description as an independent variable. The lack of any significant main effect of the job involvement or the interaction effect on the message framing items or the message consequence items, established the validity of the confounding checks.

#### **D. Results**

There were 373 students (Female = 32.2%, International = 14.5%, Sophomore = 22.8 %, Junior = 61.7 %, Senior = 15.5%, Mean Age = 22.31) enrolled in a supply chain undergraduate course at the University of Arkansas who were recruited for the experiment, in return for a bonus grade incentive that totaled 1% of the total possible points. The entire task took at maximum of 15 minutes to complete. Responses from participants who failed the two attention check questions were deleted from the analysis. For the attention check, participants were asked to select neither agree nor disagree from a seven point scale (Strongly disagree – Strongly agree). Therefore, observations from 60 participants (16.08%) were not used for the analysis. Therefore, the experimental group comprised of 313 students (Female = 32.9%; International = 12.8 %; Sophomore = 23 %, Junior = 63.6 %, Senior = 13.4%, Mean Age = 22.27). Table 1 summarizes the group size in each treatment.

**Table 1:** Number of participants in each treatment who passed attention checks

	Consequence: Organizational		Consequence: Environmental	
	Positive Framing	Negative Framing	Positive Framing	Negative Framing
<b>Including sustainability</b>	39 (50)	35 (48)	35 (46)	43 (51)
<b>Only Departmental</b>	38 (40)	41 (47)	40 (45)	42 (46)

Note: Total number of participants within parenthesis

Table 2 summarizes the means from the study. Non-Parametric tests were used to analyze the data because the dependent variable, which was the intention to talk with company superiors, resulted in skewed responses (Cronbach's alpha = .71). A significant Shaapiro-Wilk test confirmed the non-normality of the dependent variable ( $p < .01$ ). In order to test for the effects of goal framing, a Mann-Whitney U test was conducted with framing as the independent variable and the intention to discuss as the dependent variable. No significant effect was found and hypothesis 1 is therefore not supported (Two sided Mann-Whitney U test  $t(0.994)$ ,  $p = .32$ ;  $M_{\text{PositiveFraming}} = 5.80$ ,  $M_{\text{NegativeFraming}} = 5.94$ ).

In order to test for hypotheses 2a and 2b analysis was conducted by splitting the data by the job involvement. There were significant differences between the treatments where sustainability was part of job function versus treatments where sustainability was not part of the job description. Separate analysis for the effects of message consequence was therefore conducted on the treatments where sustainability was part of the job description and the treatments where sustainability was not part of the job description. For the participants where sustainability was part of the functional role, as expected, there was no significant effect of the consequence (Two sided Mann-Whitney U test  $t(-0.53)$ ,  $p = 0.59$ ;  $M_{\text{Organizational}} = 5.92$ ,  $M_{\text{Environmental}} = 5.81$ ). Thus, hypothesis 2a is supported. For the treatment groups with sustainability not as a part of the job description, there was a significant effect of the message

consequence with the participants perceiving the organizational benefits, as opposed to environmental benefits, as more amenable to discussion (Two sided Mann-Whitney U test  $t(-2.21, p < 0.05; M_{\text{Organizational}} = 6.04, M_{\text{Environmental}} = 5.73)$ ). Hypothesis 2b is therefore supported.

To measure the change in discussion intentions post the request by the retailer to share in profits a Wilcoxon Signed Rank test was conducted. The test was significant indicating a significantly lower intention to discuss the technology post the request to share the profits (Two sided Wilcoxon Signed Rank test  $z = -7.24, p < 0.01; M_{\text{PreDiscussionIntentions}} = 5.87, M_{\text{PostDiscussionIntentions}} = 5.61$ ). Hypothesis 3 is therefore supported.

**Table 2:** Mean summary of discussion intentions

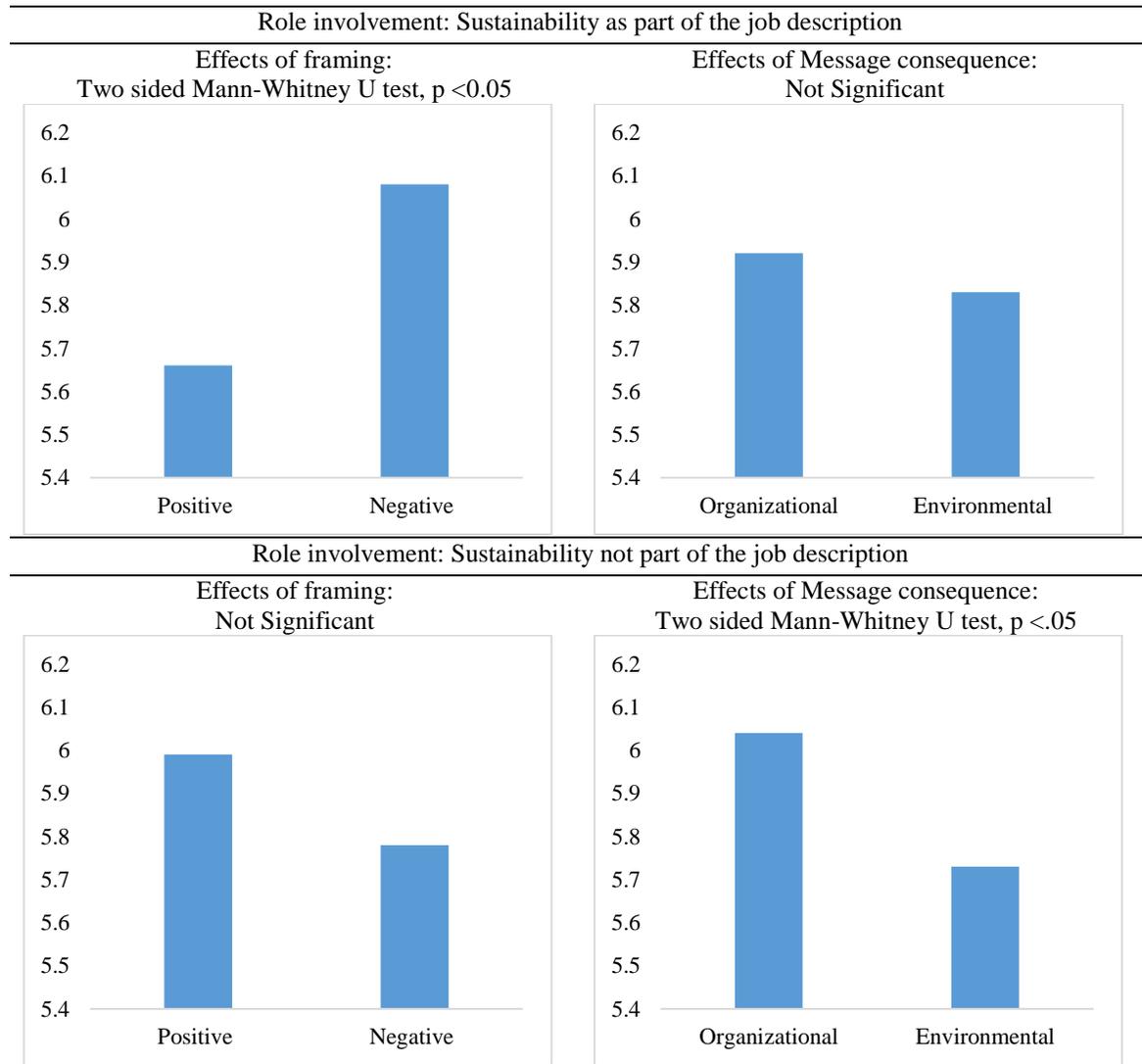
	Consequence: Organizational		Consequence: Environmental		Overall Mean
	Positive	Negative	Positive	Negative	
<b>Including sustainability</b>	5.74 (1.00)	6.13 (0.81)	5.47 (1.20)	6.10 (0.78)	5.86 (0.98)
<b>Only Departmental</b>	6.28 (0.70)	5.82 (0.90)	5.72 (0.82)	5.75 (0.91)	5.88 (0.86)
	6.00 (0.89)	5.96 (0.87)	5.60 (1.01)	5.92 (0.86)	
	5.98 (0.88)		5.77 (0.95)		

### Post Hoc analysis

The effects of framing effects were investigated by splitting the dataset by the role involvement of the participant. For the groups with sustainability as part of the job description, there was a significant effect of framing; negative framing was significantly more effective than positive framing in increasing the intention to discuss with the supervisors (Two sided Mann-Whitney U test,  $p < 0.05$ ). However there was no significant effect of framing (Two sided Mann-Whitney U test,  $p = 0.11$ ). Moreover, for the individuals with no sustainability involvement and

discussing costs, positive framing was significantly better than negative framing ((Two sided Mann-Whitney U test,  $p < 0.05$ ). The results are summarized in figure 1.

**Figure 1:** Framing and consequence effects on the different role descriptions



The results indicate that when a manager’s role includes sustainability, loss framing was more persuasive in promoting the intention to start a discussion about an environmentally friendly technology. However, with the traditional supply chain managers’ role focusing on operational benefits, an environmental initiative with a clear financial implication is more persuasive. Moreover, for these managers, framing the cost benefits in a positive manner is more effective.

## **E. Discussion**

The objective of this study is to examine the manner in which a sustainability project may be presented to a supply chain partner, such that the likelihood of discussing it within the recipient's organization is increased. This is an important first step towards the adoption of a sustainability initiative that has been overlooked by the literature. This study acknowledges the SCM manager's role in the adoption of sustainability activities (Cantor et al., 2012), and assumes that influencing the SCM professional's initial evaluation of the project helps in motivating the SCM professional to conduct further cost-benefit analysis. In today's times when SCM professional have multiple projects to choose from, this study highlights how a project can be presented to a SCM professional in another organization. The study's finding highlights the importance of tailoring the communication based on the functional responsibility of the SCM manager. Aligning the communication based on the SCM manager's role influences the persuasiveness of the communication.

Secondly, the study highlights the importance of deciding which consequence should be communicated to the decision-maker. While communicating actors might not have a preference, they should be careful to ensure that the consequences strike a chord with the decision-maker.

Finally, it highlights the existence of goal framing effects in the sustainable decision-making context. The B2B context especially highlights the efficacy of framing effects in persuading actors from other organizations. This is important since inter-organizational sustainable decision-making varies from intra-organizational sustainability decision-making. Intra-organizational actors will face similar organizational factors, such as organizational sustainability orientation and supervisor support, which will influence their decision-making (Cantor et al., 2013; Gattiker et al., 2014). Inter-organizational communication can result in

different organizational priorities clashing with one another. In such a situation, this paper provides insight into gaining an actor’s support for an initiative. The findings from the study, summarized in table 3, therefore, have important implications for theory as well as practice.

**Table 3:** Summary of findings

	<b>Consequence: Economic</b>	<b>Consequence: Environmental</b>	
<b>Including sustainability</b>	No framing effects	Significant effect of negative framing	No effects of message consequence
<b>Only Departmental</b>	Significant effect of positive framing	No framing effects	Significant effect of economic benefits consequence

The goal framing literature has reported mixed findings on the efficacy of goal framing in influencing individual behavior (Levin et al., 1998). Also, studies have overlooked the impact of goal framing effects in B2B communication, focusing on the individuals’ preferences in areas such as social dilemmas, health, and consumer choice (e.g. Block & Keller, 1995; Chen, 2016; Fleishman, 1988; Murdock & Rajagopal, 2016). Tokar et al. (2013) recently examined the persuasiveness of goal framing messages in influencing organizational employees making inventory decisions. However, it is not the context that makes a contribution. This study recognizes the need for the communicating actor to establish the functional responsibilities of the recipient. By doing so, the communicating actor stands to craft and deliver persuasive messages that motivate the addressee to discuss the initiative within the organization. When the SCM professional’s profile does not include sustainability, the communicator stands to gain by focusing on the economic consequence of the project. This is because while framing makes the economic or the sustainable issue salient, it is the sensemaking process that shapes the SCM

professional's opinion towards an initiative (Weick 1995). It has been established that a professional's departmental responsibilities subsequently influence their behavior (Barrick et al., 2013; Rousseau, 1978). Thus, when the departmental functions dictate decision-making as per the economic outcomes, it is beneficial to influence the economic consequences of the initiative. This is especially important for communication actors in organizations with a strong commitment to sustainability. Since companies with a sustainability commitment typically have a workforce who are long-term oriented and are likely to be incentivized (Eccles et al., 2012), it is likely that these actors might inadvertently focus more on the sustainability consequences as opposed to the economic consequences. This study, therefore, highlights the practical implications of considering the organizational job responsibilities of the communication recipient.

When the recipient's job focus includes considering the sustainability consequences it was found that the interest in the initiative did not depend on the consequence. However, communicating actors stood a chance to pique interests by presenting the sustainability project in the negative frame. Consistent with extant literature, the SCM professionals were more likely to discuss the initiative when it was presented as an opportunity that they could lose (Levin et al., 1998; Tokar et al., 2016). This finding can be contributed to the loss aversion or the tendency of SCM managers to be motivated by the prospect of avoiding a loss as opposed to receiving a gain of same magnitude (Kahneman & Tversky, 1979; Levin et al., 2002). Thus, this communication tactic is more likely to influence SCM managers to examine an initiative instead of simply discarding a request without even considering it.

The extant literature also examines risky choice framing and attribute framing that this study overlooks (Levin et al., 1998; Tokar et al., 2012). This is done because of the nature of the

study. Risky choice framing is suitable when evaluating alternatives with different risk levels, while attribute framing entails evaluation of different attributes of the project (Levin et al., 1998). Since goal framing is suitable to measure differences in the adoption of behavior, it was apt for this context of influencing the SCM professionals to discuss the initiative with their superiors. The risky choice framing and attribute framing present an opportunity of future research when more details of the sustainability project are to be presented to the SCM actor. Specifically, risky choice framing can be used when communication about the specific losses or gains from the initiative, while attribute framing can be used to discuss key attributes of the project. Therefore, in risky choice framing and attribute framing it is the item or the initiative that will be described in a positive or negative manner, but in goal framing the consequences for the recipient are described in a positive or negative manner (Piñon & Gambarara, 2005). Goal framing is apt as a stepping-stone to ensure that it generates interest among the communicating actors organization.

Finally, the SBRP establishes the role of ensuring fairness in asking the supplier to commit to a SSCM initiative. This was measured by a manipulation wherein the buyer informed the supplier that they expected lowered costs due to the savings. This stimulus resulted in the drop in intentions to discuss the technology. These findings are consistent with the notion that fair policies lead to commitments and investments for improving the relationship (Hornibrook et al., 2008; Liu et al., 2012). The practical implications for this finding suggests the need to work collaboratively for the implementation of SSCM initiatives. Since economic advantages of SSCM initiatives might result in the supply chain partners influencing the focal organization members to adopt an initiative so that they can benefit from it without having to work on the

initiatives, this tendency might “put off” the implementation of the sustainability initiative because the individual might perceive that what they are being asked is unfair.

This research investigation of the goal framing effects and the effects of consequence is subject to the limitations of an experimental endeavor. The control over the precision of factors influencing the participant comes at the cost of realism of context (McGrath, 1981). However, the findings are consistent with the literature. The dependent variable in this investigation is the discussion intentions. This might be a low cost option for the participants since they have nothing to lose by possibly discussing an initiative with the focal organization. While this does ensure success in the implementation of a SCM initiative it is nevertheless an important consideration while discussing sustainability with the supply chain partners. Futuremore, studies in this context can investigate the role of communication in the implementation of such initiatives based on the work design literature. The job and job design literature establishes that the outcomes are determined by the task characteristics, knowledge characteristics, social characteristics, and contextual characteristics (Morgeson & Humphrey, 2006). This comprehensive list ensures that it captures the decision-making of professional actors. However, the number of factors makes it an unsuitable study for experimental investigation and other research methods such as qualitative studies or surveys will provide valuable insights into the success of inter-organizational SSCM initiatives.

## **F. Conclusion**

Our research examines factors that will result in SCM professional’s motivation to discuss the initiative within their organization. By doing so, we extend the previous works that emphasize the need to understand the adoption of sustainability practices from a SCM professional’s perspective (Cantor et al., 2012, Kirchoff et al., 2016; Signori et al., 2015). The

SCM actor's increased affinity towards the initiative might result in the closer evaluation of the sustainability initiatives. This is especially important as suppliers are regularly asked by their buyers to work on different initiatives to benefit the supply chain. These communication mechanisms may be beneficial to influence the SCM actor in a manner such that it might stand out over other alternatives.

## G. References

- Ashcraft, K. L., Kuhn, T. R., & Cooren, F. (2009). 1 Constitutional amendments: "Materializing" organizational communication. *Academy of Management Annals*, 3(1), 1-64.
- Avineri, E., & Waygood, E. O. D. (2013). Applying valence framing to enhance the effect of information on transport-related carbon dioxide emissions. *Transportation Research Part A: Policy and Practice*, 48, 31-38.
- Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful work behavior: The role of personality, higher-order goals, and job characteristics. *Academy of Management Review*, 38(1), 132-153.
- Block, L. G., & Keller, P. A. (1995). When to accentuate the negative: The effects of perceived efficacy and message framing on intentions to perform a health-related behavior. *Journal of Marketing Research*, 32(2), 192-203.
- Brockhaus, S., Kersten, W., & Knemeyer, A. M. (2013). Where do we go from here? progressing sustainability implementation efforts across supply chains. *Journal of Business Logistics*, 34(2), 167-182.
- Busse, C., Schleper, M. C., Niu, M., & Wagner, S. M. (2016). Supplier development for sustainability: Contextual barriers in global supply chains. *International Journal of Physical Distribution & Logistics Management*, 46(5), 442-468.
- Cantor, D. E., Macdonald, J. R., & Crum, M. R. (2011). The influence of workplace justice perceptions on commercial driver turnover intentions. *Journal of Business Logistics*, 32(3), 274-286.
- Cantor, D. E., Morrow, P. C., & Montabon, F. (2012). Engagement in environmental behaviors among supply chain management employees: An organizational support theoretical perspective. *Journal of Supply Chain Management*, 48(3), 33-51.
- Cantor, D. E., Morrow, P. C., McElroy, J. C., & Montabon, F. (2013). The role of individual and organizational factors in promoting firm environmental practices. *International Journal of Physical Distribution & Logistics Management*, 43(5/6), 407-427.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Chen, M. (2016). Consumer response to health product communication: The role of perceived product efficacy. *Journal of Business Research*, 69(9), 3251-3260.

- Colquitt, J. A., & Zipay, K. P. (2015). Justice, fairness, and employee reactions. *Annual Review of Organizational Psychology and Organizational Behavior*, 2(1), 75-99.
- Cornelissen, J. P., Durand, R., Fiss, P. C., Lammers, J. C., & Vaara, E. (2015). *Putting Communication Front and Center in Institutional Theory and Analysis*, 40(1), 10-27.
- Cornelissen, J., Van Bekkum, T., & Van Ruler, B. (2006). Corporate communications: A practice-based theoretical conceptualization. *Corporate Reputation Review*, 9(2), 114-133.
- Dach, L., & Allmendinger, K. (2014). Sustainability in corporate communications and its influence on consumer awareness and perceptions: A study of H&M and primark. *Procedia-Social and Behavioral Sciences*, 130, 409-418.
- Daily, B. F., & Huang, S. (2001). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of Operations & Production Management*, 21(12), 1539-1552.
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. *Management Science*, 60(11), 2835-2857.
- Ehrgott, M., Reimann, F., Kaufmann, L., & Carter, C. R. (2013). Environmental development of emerging economy suppliers: Antecedents and outcomes. *Journal of Business Logistics*, 34(2), 131-147.
- Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51-58.
- Fiss, P. C., & Hirsch, P. M. (2005). The discourse of globalization: Framing and sensemaking of an emerging concept. *American Sociological Review*, 70(1), 29-52.
- Fleishman, J. A. (1988). The effects of decision framing and others' behavior on cooperation in a social dilemma. *Journal of Conflict Resolution*, 32(1), 162-180.
- Ganzach, Y., & Karsahi, N. (1995). Message framing and buying behavior: A field experiment. *Journal of Business Research*, 32(1), 11-17.
- Gattiker, T. F., Carter, C. R., Huang, X., & Tate, W. L. (2014). Managerial commitment to sustainable supply chain management projects. *Journal of Business Logistics*, 35(4), 318-337.
- Gattiker, T. F., & Carter, C. R. (2010). Understanding project champions' ability to gain intra-organizational commitment for environmental projects. *Journal of Operations Management*, 28(1), 72-85.
- Gimenez, C., & Tachizawa, E. M. (2012). Extending sustainability to suppliers: A systematic literature review. *Supply Chain Management: An International Journal*, 17(5), 531-543.

- Greko, K., Calantone, R. J., Bremmers, H. J., Trienekens, J. H., & Omta, S. W. F. (2016). How environmental collaboration with suppliers and customers influences firm performance: Evidence from Dutch food and beverage processors. *Journal of Cleaner Production*, 112, Part 3, 1861-1871.
- Griffith, D. A., Harvey, M. G., & Lusch, R. F. (2006). Social exchange in supply chain relationships: The resulting benefits of procedural and distributive justice. *Journal of Operations Management*, 24(2), 85-98.
- Hazen, B. T., Cegielski, C., & Hanna, J. B. (2011). Diffusion of green supply chain management: Examining perceived quality of green reverse logistics. *The International Journal of Logistics Management*, 22(3), 373-389.
- Hofer, A. R., Knemeyer, A. M., & Murphy, P. R. (2012). The roles of procedural and distributive justice in logistics outsourcing relationships. *Journal of Business Logistics*, 33(3), 196-209.
- Hornibrook, S., Fearne, A., & Lazzarin, M. (2009). Exploring the association between fairness and organisational outcomes in supply chain relationships. *International Journal of Retail & Distribution Management*, 37(9), 790-803.
- Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating Motivational, Social, and Contextual Work Design Features: A Meta-Analytic Summary and Theoretical Extension of the Work Design Literature. *Journal of Applied Psychology*, 92, 1332-1356.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47, 263-291.
- Kassinis, G. I., & Soteriou, A. C. (2003). Greening the service profit chain: The impact of environmental management practices. *Production and Operations Management*, 12(3), 386-403.
- Kaynak, R., Sert, T., Sert, G., & Akyuz, B. (2015). Supply chain unethical behaviors and continuity of relationship: Using the PLS approach for testing moderation effects of inter-organizational justice. *International Journal of Production Economics*, 162, 83-91.
- Kersten, W., Allonas, C., Brockhaus, S., & Wagenstetter, N. (2010). Green logistics: An innovation for logistics products. *Innovative Process Optimization Methods in Logistics: Emerging Trends, Concepts and Technologies*. Erich Schmidt Verlag, , 369-386.
- Kirchoff, J. F., Omar, A., & Fugate, B. S. (2016). A behavioral theory of sustainable supply chain management decision-making in Non-exemplar firms. *Journal of Supply Chain Management*, 52(1), 41-65.
- Krishnamurthy, P., Carter, P., & Blair, E. (2001). Attribute framing and goal framing effects in health decisions. *Organizational Behavior and Human Decision Processes*, 85(2), 382-399.

- Lee, A. Y., & Aaker, J. L. (2004). Bringing the frame into focus: The influence of regulatory fit on processing fluency and persuasion. *Journal of Personality and Social Psychology*, 86(2), 205.
- Lee, S., & Klassen, R. D. (2008). Drivers and enablers that foster environmental management capabilities in small-and medium-sized suppliers in supply chains. *Production and Operations Management*, 17(6), 573-586.
- Leventhal, G. S. (1980). What should be done with equity theory? *Social exchange* (pp. 27-55) Springer.
- Levin, I. P., Gaeth, G. J., Schreiber, J., & Lauriola, M. (2002). A new look at framing effects: Distribution of effect sizes, individual differences, and independence of types of effects. *Organizational Behavior and Human Decision Processes*, 88(1), 411-429.
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76(2), 149-188.
- Liu, Y., Huang, Y., Luo, Y., & Zhao, Y. (2012). How does justice matter in achieving buyer-supplier relationship performance? *Journal of Operations Management*, 30(5), 355-367.
- Loewenstein, G., & Issacharoff, S. (1994). Source dependence in the valuation of objects. *Journal of Behavioral Decision-making*, 7(3), 157-168.
- Maheswaran, D., & Meyers-Levy, J. (1990). The influence of message framing and issue involvement. *Journal of Marketing Research*, 27, 361-367.
- McGrath, J. E. (1981). Dilemmatics: The study of research choices and dilemmas. *American Behavioral Scientist*, 25(2), 179-210.
- Melnyk, S. A., Sroufe, R. P., & Calantone, R. (2003). Assessing the impact of environmental management systems on corporate and environmental performance. *Journal of Operations Management*, 21(3), 329-351.
- Meyerowitz, B. E., & Chaiken, S. (1987). The effect of message framing on breast self-examination attitudes, intentions, and behavior. *Journal of Personality and Social Psychology*, 52(3), 500-510.
- Morgeson, F. P., & Humphrey, S. E. (2006). The work design questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology*, 91(6), 1321-1339.
- Montabon, F., Sroufe, R., & Narasimhan, R. (2007). An examination of corporate reporting, environmental management practices and firm performance. *Journal of Operations Management*, 25(5), 998-1014.

- Murdock, M. R., & Rajagopal, P. (2016). The sting of social: How emphasizing social consequences in warning messages influences perceptions of risk. *Journal of Marketing*,
- Murphy, P. R., & Poist, R. F. (2003). Green perspectives and practices: A “comparative logistics” study. *Supply Chain Management: An International Journal*, 8(2), 122-131.
- Newman, C. L., Howlett, E., Burton, S., Kozup, J. C., & Heintz Tangari, A. (2012). The influence of consumer concern about global climate change on framing effects for environmental sustainability messages. *International Journal of Advertising*, 31(3), 511-527.
- Olsen, M. C., Slotegraaf, R. J., & Chandukala, S. R. (2014). Green claims and message frames: How green new products change brand attitude. *Journal of Marketing*, 78(5), 119-137.
- Piñon, A., & Gambarara, H. (2005). A meta-analytic review of framing effect: Risky, attribute and goal framing. *Psicothema*, 17(2), 325-331.
- Rauer, J., & Kaufmann, L. (2015). Mitigating external barriers to implementing green supply chain management: A grounded theory investigation of Green-Tech companies' rare earth metals supply chains. *Journal of Supply Chain Management*, 51(2), 65-88.
- Rousseau, D. M. (1978). Characteristics of departments, positions, and individuals: Contexts for attitudes and behavior. *Administrative Science Quarterly*, 23, 521-540.
- Rungtusanatham, M., Wallin, C., & Eckerd, S. (2011). The vignette in a scenario-based role-playing experiment. *Journal of Supply Chain Management*, 47(3), 9-16.
- Sarkis, J., Gonzalez-Torre, P., & Adenso-Diaz, B. (2010). Stakeholder pressure and the adoption of environmental practices: The mediating effect of training. *Journal of Operations Management*, 28(2), 163-176.
- Schade, B., & Schade, W. (2005). Evaluating economic feasibility and technical progress of environmentally sustainable transport scenarios by a backcasting approach with ESCOT. *Transport Reviews*, 25(6), 647-668.
- Schultz, F., & Wehmeier, S. (2010). Institutionalization of corporate social responsibility within corporate communications: Combining institutional, sensemaking and communication perspectives. *Corporate Communications: An International Journal*, 15(1), 9-29.
- Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, 16(15), 1699-1710.
- Signitzer, B., & Prexl, A. (2007). Corporate sustainability communications: Aspects of theory and professionalization. *Journal of Public Relations Research*, 20(1), 1-19.

- Signori, P., Flint, D. J., & Golcic, S. (2015). Toward sustainable supply chain orientation (SSCO): Mapping managerial perspectives. *International Journal of Physical Distribution & Logistics Management*, 45(6), 536-564.
- Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1), 53-80.
- Sroufe, R. (2003). Effects of environmental management systems on environmental management practices and operations. *Production and Operations Management*, 12(3), 416.
- Steffen, V. J., Sternberg, L., Teegarden, L. A., & Shepherd, K. (1994). Practice and persuasive frame: Effects on beliefs, intention, and performance of a cancer Self-Examination I. *Journal of Applied Social Psychology*, 24(10), 897-925.
- Tokar, T., Aloysius, J., Waller, M., & Hawkins, D. L. (2016). Exploring framing effects in inventory control decisions: Violations of procedure invariance. *Production and Operations Management*, 25(2), 306-329.
- Ubeda, S., Arcelus, F. J., & Faulin, J. (2011). Green logistics at eroski: A case study. *International Journal of Production Economics*, 131(1), 44-51.
- Visser, W., & Crane, A. (2010). Corporate sustainability and the individual: Understanding what drives sustainability professionals as change agents. *SSRN Working Paper Series*.
- Wang, Q., Craighead, C. W., & Li, J. J. (2014). Justice served: Mitigating damaged trust stemming from supply chain disruptions. *Journal of Operations Management*, 32(6), 374-386.
- Weick, K. E. (1995). *Sensemaking in organizations* Sage.
- Williams, S., & Schaefer, A. (2013). Small and medium-sized enterprises and sustainability: Managers' values and engagement with environmental and climate change issues. *Business Strategy and the Environment*, 22(3), 173-186.
- Wichmann, B. K., Carter, C. R., Kaufmann, L., & Wilson, J. R. (2016). Making environmental SCM initiatives work—Moving beyond the dyad to gain affective commitment. *Journal of Supply Chain Management*, 52(1), 21-40.
- Zhu, Q., & Sarkis, J. (2007). The moderating effects of institutional pressures on emergent green supply chain practices and performance. *International Journal of Production Research*, 45(18-19), 4333-4355.
- Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in chinese manufacturing enterprises. *Journal of Operations Management*, 22(3), 265-289.

## H. Appendix

### Appendix A: Vignette

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#### *Seller involvement with costs setup:*

You work for a consumer goods company in the US. The motto of your company is “Always there for you”. Your organization is committed to sustainability goals.

As an account manager for the cereal category, you handle the sales to Express Shop, a retail customer. You have been working with Mark, a buyer at Express Shop. Mark has been asking you to get your company to invest in the latest technology that would decrease the greenhouse gas in your operations. **While evaluating such decisions it is your responsibility to keep the costs low.**

Mark informs you that,

*Involvement with costs and sustainability setup:* You work for a consumer goods company in the US. The motto of your company is “Always there for you”. Your organization is committed to sustainability goals.

As an account manager for the cereal category, you handle the sales to Express Shop, a retail customer. You have been working with Mark, a buyer at Express Shop. Mark has been asking you to get your company to invest in the latest technology that would decrease the greenhouse gas in your operations. **While evaluating such decisions it is your responsibility to keep the costs low and try achieve the organizations sustainability goals.**

Mark informs you that,

---

#### **Organizational Consequence**

*Gain framing:* By investing in the technology your company **is gaining an** opportunity to cut fuel and utility costs.

*Loss Framing:* By not investing in the technology your company **is losing an** opportunity to cut fuel and utility costs.

#### **Environmental Consequence**

*Gain Framing:* By investing in the technology your company **is gaining an** opportunity to reduce greenhouse house emissions

*Loss Framing:* By not investing in the technology your company **is losing an** opportunity to reduce greenhouse house emissions

---

It is up to you to talk with the senior executives on this matter. How likely are you to talk to your to your seniors in your organization about the possibility to invest in these technologies?

#### **For the vignette with fairness implications:**

Mark expects that the savings due to the technology will be reflected in lower prices for his company.

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## **Appendix B: Scales**

### **Discussion intention (DI) (Liu et al, 2008) (Pre and Post)**

DI\_1: I am likely to discuss the possibility of investment in the technology with my manager.

DI\_2: I expect to discuss the possibility of investment in the technology with my manager.

DI\_3: I am not likely to discuss this technology with my supervisor. (Reverse coded)

### **Procedural Justice measured after supplier wants cost to drop (Griffith et al., 2006).**

PJ\_1: Express shoppe, Mark's company, has fair policies regarding the distribution of outcomes.

PJ\_2: Express shoppe, Mark's company treats us fairly.

PJ\_3: Express shoppe, Marks company, are equitable in the treatment with our company.

### **Manipulation checks**

#### **Involvement (Maheshwaran and Levy, 1990)**

I\_1: The information is relevant to my job.

I\_2: The information is of interest for my job.

I\_3: My job is involved in the issues presented by the message.

I\_4: The information is beneficial to my job.

I\_5: The information presented does not matter to my job. (Reverse coded)

### **Manipulation checks**

#### **Goal framing (Loroz, 2007; Maheshwaran & Levy, 1990)**

G\_1: The message contends that investing in the technology leads to positive consequences.

G\_2: The message stressed the positive results of investing in technology.

G\_3: The message stressed the negative results of investing in the technology. (Reverse coded)

G\_4: The information directed attention to the negative consequences of not investing in technology. (Reverse coded)

#### **Job Responsibility**

J\_1: The objective of my job is

J\_2: The decisions I make in the job impact

J\_3: My job responsibilities include

#### **Message content (Maheshwaran & Levy, 1990)**

O\_1: The message highlights the cost implications of the implementation

O\_2: The message contends that investing in the technology impacts the costs

O\_3: The information directed attention to the financial effects of investing in the technology

E\_1: The message highlights the environmental implications of the implementation

E\_2: The message contends that investing in the technology leads impacts the environmental emissions.

E\_3: The information directed attention to the environmental effects of investing in the technology

**Realism checks (Eckerd et al. 2013)**

RC\_1: I found the situation described in the scenario to be realistic

RC\_2: I believe the situation experienced during the scenario could happen in real life

RC\_3: I took my assumed role seriously while conducting the experiment.

## Appendix C: IRB



Office of Research Compliance  
Institutional Review Board

March 28, 2017

### MEMORANDUM

TO: Saif Mir  
John Aloysius  
Brian Fugate  
Jon Johnson

FROM: Ro Windwalker  
IRB Coordinator

RE: PROJECT MODIFICATION

IRB Protocol #: 16-04-884

Protocol Title: *Effects of Goal Framing on Intentions to Adopt Sustainable Behavior*

Review Type:  EXEMPT  EXPEDITED  FULL IRB

Approved Project Period: Start Date: 03/27/2017 Expiration Date: 04/27/2017

Your request to modify the referenced protocol has been approved by the IRB. This protocol is currently approved for 1,400 total participants. If you wish to make any further modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

Please note that this approval does not extend the Approved Project Period. Should you wish to extend your project beyond the current expiration date, you must submit a request for continuation using the UAF IRB form "Continuing Review for IRB Approved Projects." The request should be sent to the IRB Coordinator, 109 MLKG Building.

For protocols requiring FULL IRB review, please submit your request at least one month prior to the current expiration date. (High-risk protocols may require even more time for approval.) For protocols requiring an EXPEDITED or EXEMPT review, submit your request at least two weeks prior to the current expiration date. Failure to obtain approval for a continuation on or *prior to* the currently approved expiration date will result in termination of the protocol and you will be required to submit a new protocol to the IRB before continuing the project. Data collected past the protocol expiration date may need to be eliminated from the dataset should you wish to publish. Only data collected under a currently approved protocol can be certified by the IRB for any purpose.

If you have questions or need any assistance from the IRB, please contact me at 109 MLKG Building, 5-2208, or [irb@uark.edu](mailto:irb@uark.edu).

## **V. Chapter 5**

### **A. Discussion**

The objective of this dissertation is to establish the efficacy of communication in changing organizational processes and thereby influencing the creation of sustainable supply chains. Three different research methodologies were applied to investigate different research questions. All three studies focused on changing the supply chain management (SCM) professionals' intentions to work on sustainable supply chain management (SSCM) initiatives. Chapter 2 outlines a grounded theory study where the role of communication in the voluntary sustainable supply chain contagion (SSCC) phenomenon is examined. SSCC is the propagation of SSCM practices from the communicating organization to the focal organization, by convincing the focal firm's SCM professionals to work on the initiative. Chapters 3 and 4 are motivated by the findings of the first investigation.

Chapter 3 presented a field experiment, intended to influence truck drivers to reduce idling and thereby adopt environment management practices (EMS). This phenomenon is known as the voluntary pro-environmental behavior of employees (VPBE) (Lülfes & Hahn, 2013, 2014). While the grounded theory study focuses on inter-organizational communication, this study establishes the role of communication in intra-organizational communication. This field investigation was motivated by the finding from the grounded theory study that the first step in creating sustainable supply chains is influencing the employees themselves.

Finally, Chapter 4 evaluates the role of inter-organizational communication in motivating the focal organization's professional to discuss the initiative within their organization. The vignette-based study examined the role of goal framing, message consequences, and individuals'

role involvement in influencing SCM actors' intention to discuss a SSCM initiative within their organization. This intention to discuss is the first hurdle after which the cost-benefit analysis is conducted and crossing the hurdle is one step closer to the finish line. This study was motivated by the findings from the grounded theory study, which called for an alignment of the business case with the organizational responsibility of the actor, augmenting it with the framing literature.

In the next sections of this chapter, we highlight the important theoretical implications, practical implications, and limitations from each study. The last section, the conclusion, summarizes the dissertation.

## **B. Essay 1 Contributions and Implications**

The grounded theory investigation revealed how, similar to operational decision-making, the business case for the SSCM initiatives influences the decision-making process (Carter & Rogers, 2008; Schreck, 2011). The SSCC model of communication captures how communication impacts the decision-making of a SCM professional. The theoretical and practical implications of this study are outlined in the next two sections.

### **Theoretical Contributions**

First, the SSCC contagion model presented in Chapter 2, contributes to theory by proposing how sustainability conversations influence an upstream supply chain member's intention to adopt a SSCM initiative. The model outlines the communication pathway that spans multiple organizations and the various actors, each from different departments and with different departmental functions, embedded in the network.

Second, the findings highlight the importance of ensuring that the business case is aligned with the departmental responsibilities of the SCM professional. This is also known as framing or the accentuation of particular issues in communication so as to increase the saliency and thereby

ensure that the recipient's willingness to follow through with the recommendations (Entman, 1993). While framing presents the information to the actor, actors use the sensemaking process to make sense of the situation and come to a conclusion (Fiss & Hirsch, 2005). This study, therefore, highlights the myopic tendencies of an actor by prioritizing the departmental benefits over organizational benefits.

Third, the study highlights a multi-level model for SSCC with the SCM professionals' decision-making playing a key role in the adoption of SSCM initiatives (Meyer & Goes, 1988; Smets et al., 2012). The three factors outlined in the study are network factors, communication factors, and structural factors. The SSCC model therefore successfully integrates the theoretical concepts from network theory to develop a greater understanding of the proliferation of SSCM initiatives (Borgatti & Li, 2009; Burt, 1987). These include the contagion models, the role of sustainability teams as structural holes, the utilization of a top-down approach, and the proximity to the focal and communication actors. Construal level theory informs the findings of the communication factors (Liberman & Trope, 1998; Liberman et al., 2002). Specifically, the analysis revealed that a concrete problem-solving approach is beneficial in instances when the business case for the SSCM initiatives is weak in order to influence the focal actor's affinity towards a project by providing a well-defined action plan. Finally, the findings for the structural level factors are consistent with the findings of SSCM literature highlighting the role of power, collaboration, organizational sustainability orientation, and individual sustainability orientation (Clifton & Amran, 2010; Hollos et al., 2011; Kirchoff et al., 2015; Pagell & Wu, 2009; Pilbeam et al., 2012; Signori et al., 2015; Zhu & Sarkis, 2004). The study, therefore, presents a testable model incorporating the multi-level aspects of inter-organizational communication.

## **Practical Implications**

The study also presented several practical implications. First, SSCC is facilitated by involving different competitors to work together for the benefit of environmental and social sustainability. Thus, communicating organizations stand to gain by including multiple suppliers in these conversations as opposed to a few focal suppliers, since the focal actors might be more willing to trade off some of the financial implications as long as all the competitors are affected in a similar fashion.

Second, sustainability teams, both internal and external, were a valuable resource in the SSCC process. Therefore, organizations striving to become sustainable should seek out their expertise. The sustainability teams ensure that when SCM and top-management actors made SSCM decisions, they have access to pertinent information for informed decision-making.

Third, communicating actors can influence SSCC by including top-management teams from focal organizations into the communications. This top-down communication is effective when the business case is weak for the SCM actors.

Fourth, the communicating actors should know their audience and ensure that they frame the business case by highlighting the departmental benefits over the organizational benefits. The irony is that sustainable conversations should discuss the organizational consequences over the environmental consequences.

Finally, the factors outlined in the SSCC are not mutually exclusive, and utilizing several factors in tandem may enhance the persuasiveness of communications. For instance, a top-down approach, utilizing sustainability managers and focusing on the departmental benefits may be

more influential over just a top-down approach. Thus, the SSCC model is a tool that can be utilized to build a pathway for influential sustainability communications.

### **C. Essay 2 Contributions and Implications**

Chapter 3 of this dissertation outlined the findings from a field experiment with a trucking company. The random assignment is hard to achieve in such field investigations, and this study was able to overcome this drawback of field experiments (Shadish et al., 2002). The following, in the context of trucking, are some of the key contributions and implications gained in the adoption of VPBE.

#### **Theoretical Contributions**

First, the field investigation found social norms over personal norms to be more influential for VPBE behavior. While this may be contrary to the VPBE framework, which highlights personal norms as driving employee behavior, these may be tied together by the understanding that social norms influence the personal norms (Bamberg & Möser, 2007; Lulfs & Hahn, 2013, 2014). The change in behavior to conform to the social norms is consistent with the focus theory of normative conduct suggesting social norms result in modifying behavior to the expectations of others (Biel & Thøgersen, 2007).

Second, the study found that messages highlighting the pro-environmental consequence were more effective than messages highlighting the pro-organizational context. This is interesting considering that supply chain literature focuses on the SSCM initiatives as a means to gain organizational benefits from the economic profitability or competitive advantages (Kirchoff et al., 2016; Srivastava, 2007). However, the findings reflect the humane side of employees.

Third, the study found evidence of message fatigue, which questions the applicability of such communication initiatives within organizations. However, the findings at the group level indicate that the organizations still stand to benefit from such initiatives most likely due to truck driver turnover. This finding, therefore, presents a boundary condition for the effectiveness of the theory in an organizational context.

### **Practical Implications**

The major takeaway from the field investigation is the persuasive use of description norm framed communication in influencing VPBE. These messages do not highlight any pro-organizational or pro-environmental consequence. However, due to the desire to match behavior with other employees, there is a positive effect on the adoption of VPBE. Practitioners can leverage this to ensure that employees exhibit VPBE. Yet, care should be taken to ensure that such communication reflects a level of adoption that is satisfactory. Otherwise, a boomerang effect may be perceived resulting in more harm than good (Cialdini et al., 2006; Cialdini, 2003).

Second, organizations might benefit from changing the communication regularly and thus reducing the changes of message fatigue due to exposure to the same messages.

Third, in the trucking context, the field study shows that in situations where there is a high turnover rate the organizational stands to benefit from such communication strategies due to the truck driver turnover. The findings from this study can also be applied to other operational contexts such as water, airline transportation, and any other context where the human operators regularly keep changing.

## **D. Essay 3 Contributions and Implications**

Essay 3 was a vignette-based investigation to examine the manner in which a sustainability project may be presented to a supply chain partner, such that the likelihood of discussing it within the recipient's organization is increased. Specifically, the 2x2x2 design investigates the efficacy of messages based on the tenets of goal framing (positive versus negative framing) and highlighting different consequences (organizational versus environmental) based on and individual's job focus (focusing on economic and sustainability benefits versus focusing only on economic benefits). The following are the key theoretical and practical implications.

### **Theoretical Contributions**

First, the study found different effects of goal framing based on the manipulated sustainability involvement of the participant. The study found a significant positive effect on the intentions to discuss the technology within the focal organization when negative framing was utilized for the groups where sustainability was part of the job description. However, these effects were washed away for the groups where sustainability was not part of the job description. This finding is consistent with the mixed findings in the literature of goal framings (Levin et al., 1998).

Second, the experiment highlighted the moderating role of job involvement on the message consequences. Specifically, when the job involvement of the actor focused on sustainability, it did not matter whether the message highlighted the organizational or environmental consequences. However, when the job involvement of the professional included

sustainability, emphasizing the organizational consequences was more influential in motivating the focal actors to discuss the sustainability initiative within the organization.

Finally, consistent with the literature and theoretical findings, the vignette-based experiment establishes the role of ensuring fairness in asking the supplier to commit to a SSCM initiative (Hornbook et al., 2008; Liu et al., 2012).

### **Practical implications**

First, the study highlights the importance of practitioners ensuring that they align the consequence of the SSCM initiative to the role of the SCM actor. Doing so ensures that the sensemaking process shapes the SCM professionals positively towards an SSCM initiative (Weick 1995). A professional's departmental responsibilities have been found to influence their behavior and decision-making (Barrick et al., 2013; Rousseau, 1978;). Thus, focusing on the economic consequences only, even for a SSCM initiative, would influence their perceptions of the initiative and the intentions to subsequently perform a detailed cost-benefit analysis. This study, therefore, highlights the practical implications of considering the organizational job responsibilities of the communication recipient.

Finally, the study reiterates the notion of being fair in terms of the wants of supply chain partners (Hornibrook et al., 2008; Liu et al., 2012). When the economic aspect of the SSCM is exploited with an intention to gain from it without any investment, the intention to discuss the technology is adversely affected. This factor might be mitigated by ensuring that organizations work collaboratively for such SSCM initiatives (Brockhaus et al., 2103).

## **E. Conclusion**

The three studies, comprising this dissertation utilize different methodologies and theoretical frameworks but, are consistent with the same assumptions. First, the fundamental assumption was that the SCM actors are the drivers for change for the sustainable supply chain creation process. It is by influencing the SCM professionals, that organizations, and subsequently supply chains, behave sustainably for the social, environmental, and economic benefits.

Second, even though the studies include both inter- and intra-organizational contexts all studies targeted the voluntary behavior of the SCM actors. Thus, the grounded theory study focused on the voluntary adoption of initiatives to ensure that SCM partners did not feel pressured. The field investigation focused on VPBE, and no incentives were given to the truck drivers.

Finally, the dependent variable in the vignette-based study, the intention to discuss the SSCM initiative within the organization, was not influenced by any incentives or the use of power. Thus, all three studies are relevant for practitioners striving to work on sustainability issues within and outside the organization.

The importance of the business case was verified in all three studies. Essay 1 and Essay 3, both focusing on inter-organizational communication, highlighted aligning the importance of SSCM initiatives with the departmental responsibilities of the focal actor. This rationale would also apply from intra-firm communication to result in persuasive sustainability conversations between different departments. Moreover, while framing the business case, Essay 3, found that the business case might be framed focusing on the environmental consequences when the job description of the SCM actor includes sustainability. It is also interesting that the field experiment with the truck drivers found pro-environmental messages more influential than pro-

organizational messages. This finding presents an interesting avenue for future research by focusing on differences in influential power of communication between managers and non-managers.

Communication has mainly been incorporated as a tool of information sharing to improve coordination and relay expectations with the supply chain partners (Busse et al., 2016; Lu et al., 2012). This dissertation is based on the power of communication to influence organizational activities and subsequently influence the supply chain (Ashcraft et al., 2009; Cornelissen et al., 2015). The findings from the three studies provide evidence concerning the influential nature of communication in motivating employees and supply chain partners to adopt sustainability activities and thus create sustainable supply chains.

## F. References

- Ashcraft, K. L., Kuhn, T. R., & Cooren, F. (2009). 1 Constitutional amendments: "Materializing" organizational communication. *Academy of Management Annals*, 3(1), 1-64.
- Bamberg, S., & Möser, G. (2007). Twenty years after hines, hungerford, and tomara: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology*, 27(1), 14-25.
- Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful work behavior: The role of personality, higher-order goals, and job characteristics. *Academy of Management Review*, 38(1), 132-153.
- Biel, A., & Thøgersen, J. (2007). Activation of social norms in social dilemmas: A review of the evidence and reflections on the implications for environmental behaviour. *Journal of Economic Psychology*, 28(1), 93-112.
- Borgatti, S. P., & Li, X. (2009). On social network analysis in a supply chain context\*. *Journal of Supply Chain Management*, 45(2), 5-22.
- Brockhaus, S., Kersten, W., & Knemeyer, A. M. (2013). Where do we go from here? progressing sustainability implementation efforts across supply chains. *Journal of Business Logistics*, 34(2), 167-182.
- Burt, R. S. (1987). Social contagion and innovation: Cohesion versus structural equivalence. *American Journal of Sociology*, 92(6) , 1287-1335.
- Busse, C., Schleper, M. C., Niu, M., & Wagner, S. M. (2016). Supplier development for sustainability: Contextual barriers in global supply chains. *International Journal of Physical Distribution & Logistics Management*, 46(5), 442-468.
- Carter, C. R., & Rogers, D. S. (2008). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Cialdini, R. B. (2003). Crafting normative messages to protect the environment. *Current Directions in Psychological Science*, 12(4), 105-109.
- Cialdini, R. B., Demaine, L. J., Sagarin, B. J., Barrett, D. W., Rhoads, K., & Winter, P. L. (2006). Managing social norms for persuasive impact. *Social Influence*, 1(1), 3-15.
- Clifton, D., & Amran, A. (2011). The stakeholder approach: A sustainability perspective. *Journal of Business Ethics*, 98(1), 121-136.

- Cornelissen, J. P., Durand, R., Fiss, P. C., Lammers, J. C., & Vaara, E. (2015). *Putting Communication Front and Center in Institutional Theory and Analysis*, 40(1), 10-27.
- Entman, R. M. (1993). Framing: Toward clarification of a fractured paradigm. *Journal of Communication*, 43(4), 51-58.
- Fiss, P. C., & Hirsch, P. M. (2005). The discourse of globalization: Framing and sensemaking of an emerging concept. *American Sociological Review*, 70(1), 29-52.
- Hollos, D., Blome, C., & Foerstl, K. (2012). Does sustainable supplier co-operation affect performance? examining implications for the triple bottom line. *International Journal of Production Research*, 50(11), 2968-2986.
- Hornibrook, S., Fearne, A., & Lazzarin, M. (2009). Exploring the association between fairness and organisational outcomes in supply chain relationships. *International Journal of Retail & Distribution Management*, 37(9), 790-803.
- Kirchoff, J. F., Omar, A., & Fugate, B. S. (2016). A behavioral theory of sustainable supply chain management decision-making in Non-exemplar firms. *Journal of Supply Chain Management*, 52(1), 41-65.
- Levin, I. P., Schneider, S. L., & Gaeth, G. J. (1998). All frames are not created equal: A typology and critical analysis of framing effects. *Organizational Behavior and Human Decision Processes*, 76(2), 149-188.
- Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, 38(6), 523-534.
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, 75(1), 5-18.
- Liu, Y., Huang, Y., Luo, Y., & Zhao, Y. (2012). How does justice matter in achieving buyer-supplier relationship performance? *Journal of Operations Management*, 30(5), 355-367.
- Lu, R. X., Lee, P. K., & Cheng, T. (2012). Socially responsible supplier development: Construct development and measurement validation. *International Journal of Production Economics*, 140(1), 160-167.
- Lülfes, R., & Hahn, R. (2013). Corporate greening beyond formal programs, initiatives, and systems: A conceptual model for voluntary pro-environmental behavior of employees. *European Management Review*, 10(2), 83-98.
- Lülfes, R., & Hahn, R. (2014). Sustainable behavior in the business sphere: A comprehensive overview of the explanatory power of psychological models. *Organization & Environment*, 27(1), 43-64.

- Meyer, A. D., & Goes, J. B. (1988). Organizational assimilation of innovations: A multilevel contextual analysis. *Academy of Management Journal*, 31(4), 897-923.
- Pagell, M., & Wu, Z. (2009). Building a more complete theory of sustainable supply chain management using case studies of 10 exemplars. *Journal of Supply Chain Management*, 45(2), 37-56.
- Pilbeam, C., Alvarez, G., & Wilson, H. (2012). The governance of supply networks: A systematic literature review. *Supply Chain Management*, 17(4), 358-376.
- Rousseau, D. M. (1978). Characteristics of departments, positions, and individuals: Contexts for attitudes and behavior. *Administrative Science Quarterly*, , 521-540.
- Schreck, P. (2011). Reviewing the business case for corporate social responsibility: New evidence and analysis. *Journal of Business Ethics*, 103(2), 167-188.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Wadsworth Cengage learning.
- Srivastava, S. K. (2007). Green supply-chain management: A state-of-the-art literature review. *International Journal of Management Reviews*, 9(1), 53-80.
- Signori, P., Flint, D. J., & Golicic, S. (2015). Toward sustainable supply chain orientation (SSCO): Mapping managerial perspectives. *International Journal of Physical Distribution & Logistics Management*, 45(6), 536-564.
- Smets, M., Morris, T., & Greenwood, R. (2012). From practice to field: A multilevel model of practice-driven institutional change. *Academy of Management Journal*, 55(4), 877-904.
- Weick, K. E. (1995). *Sensemaking in organizations*. Sage.
- Zhu, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in chinese manufacturing enterprises. *Journal of Operations Management*, 22(3), 265-289.