

Integrating Behavioral Decision Theory and Sustainable Supply Chain Management: Prioritizing Economic, Environmental, and Social Dimensions in Carrier Selection

Beth Davis-Sramek¹, Rodney W. Thomas², and Brian S. Fugate²

¹Auburn University

²University of Arkansas

Carrier selection is a specialized sourcing decision with sustainability impacts in every supply chain. This research tests the effects of a transportation carrier's economic, environmental, and social sustainability performance on a shipper's carrier selection decision. Underrepresented experimental methods are used to test an a priori hypothesis derived from behavioral decision theory logic. Results contradict commonly held win-win, trade-off, and ecological perspectives of sustainable supply chain management by finding that the economic dimension of sustainability has the greatest effect on carrier selection. Our research highlights this managerial preference and offers a theoretically grounded explanation for selection behaviors. This is one of the first empirical studies to simultaneously consider all three dimensions of sustainability. It also moves beyond an internal focal firm focus to evaluate sustainability effects through the eyes of external supply chain members. Our unique approach and findings offer managerial opportunities for differentiation and resource allocation as well as policy implications for the broader transportation system.

Keywords: carrier selection; behavioral experiments; behavioral decision theory; sustainability; sustainable supply chain management; sustainable supplier selection

INTRODUCTION

Transportation forms the foundation of global supply chains, helps create time and place utility, and enables geographic specialization. As firms move their goods to market, an important supplier selection decision involves choosing a transportation carrier. Carrier selection decisions were traditionally based on criteria related to cost, service, and capability (Bardi 1973; McGinnis 1990; Kent and Parker 1999), but recent research calls for inclusion of sustainability criteria in decision making (Meixell and Norbis 2008; Williams et al. 2013; Thomas et al. 2016). Incorporating sustainability into carrier selection fits under the broader umbrella of sustainable supply chain management (SSCM), which maintains that firms can develop supply chain strategies that balance economic, environmental, and social sustainability objectives (Pagell and Shevchenko 2014; Kirchoff et al. 2016).

The broadening of carrier selection criteria to include the economic, environmental, and social SSCM dimensions is being driven by several factors: (1) the increase in transportation firm bankruptcies (Compeau 2010), (2) quality-of-life issues that affect driver retention (Cantor et al. 2011), (3) the large carbon footprint transportation produces (Liljestrand et al. 2015), and (4) the current and proposed transportation policy mandates (Holland et al. 2015). The dominant line of SSCM thought impacting carrier selection decisions is the “win-win” perspective: A business case can be made for including sustainability criteria, with the end result being a positive impact on operational and financial

performance (Golicic and Smith 2013). However, a burgeoning stream of research calls for a complete dismantling of this traditional win-win perspective, with fervent calls for research to consider alternate frameworks that take a trade-off perspective (Figge and Hahn 2012) or an ecological perspective (Markman and Krause 2016). These alternate perspectives assert that managers should not assess the environmental and social dimensions of SSCM through the lens of an enhanced bottom line.

All three SSCM perspectives are normative in that they prescribe what decision makers *should* do. This leaves SSCM theory development insufficiently rich because the field knows little about what managers actually think, how they react, and how they form preferences to make decisions—especially when confronted with conflicting pressures (Matthews et al. 2016). The purpose of this research is to determine which dimensions of sustainability are most important to carrier selection decisions. Rather than relying on prescriptive frameworks, this research utilizes a theory-based empirical approach to determine what shippers *actually do* in a carrier selection context. Insights from behavioral decision theory (BDT) inform the development of an a priori *hypothesis* that predicts a relationship between the economic sustainability performance of a carrier and the purchase intentions of a shipper. We test the hypothesized relationship via a series of experiments that yield significant insights to increase our theoretical understanding of SSCM. Results of the experiments also offer managerial guidance based on how managers *actually behave*.

LITERATURE REVIEW

Sustainability refers to “meeting the needs of the present without compromising the ability of future generations to meet their own needs” (World Commission on Environment and Development

Corresponding author:

Rodney W. Thomas, Department of Supply Chain Management, Walton College of Business, University of Arkansas, Fayetteville, AR 72701, USA; E-mail: rthomas@walton.uark.edu

1987, 43). Extending this concept into the supply chain management domain, SSCM is conceptualized as either a management philosophy or a set of management processes that identify environmental, social, and economic dimensions of sustainability (Elkington 1997; Dubey et al. 2017). Consistent with the literature, but adapted to fit a carrier selection decision, we define the environmental dimension as the extent of the carrier's investment in "green" business practices, and the social dimension relates to the carrier's investment in its employees and the community. We define the economic dimension of SSCM as the carrier's economic and financial viability. This stands in contrast to some of the purchasing and supplier selection literature that suggests that the economic dimension is related to competitive pricing (e.g., Tate et al. 2010). While competitive pricing is certainly critical to the carrier selection decision, it should not be conflated with sustainability. Competitive pricing could even be negatively correlated with ongoing business success if carriers price themselves too low in order to grow or maintain volume from shippers. As sustainability is inherently linked to ongoing and future business success, the economic viability of a supplier more accurately reflects the underlying premise of sustainability in a carrier selection context.

While most SSCM research conceptually recognizes all three dimensions, research remains fragmented and lacks an empirical approach that simultaneously considers the economic, environmental, and social dimensions (Kirchoff et al. 2016). Several streams of research have emerged that integrate supply chain phenomena with the three dimensions of sustainability. The stream most closely connected to this research context is sustainable supplier selection.

Sustainable supplier selection

The concept of socially responsible buying was introduced more than three decades ago (Drumwright 1994). However, the penetration of environmental and social responsibility in the supplier selection literature has traditionally been quite limited (Genovese et al. 2013), and the role of suppliers to ensure a sustainable supply chain has only recently become a research focus (Foerstl et al. 2015). Drawing from recent literature, sustainable supplier selection characterizes the extent to which purchasing managers take into account social and environmental criteria in addition to economic criteria when selecting new suppliers (Goebel et al. 2012).

Calls for firms to incorporate the tripartite sustainability dimensions in addition to the traditional supplier selection variables require purchasing managers to adapt a long-established set of criteria (Goebel et al. 2012; Reuter et al. 2012). Increased attention in SSCM research offers compelling reasons for firms to implement change. First, research finds that firms are being held accountable for the waste stream generated by suppliers (Handfield et al. 2005). Second, research shows that sustainable supplier selection is associated with increased buyer performance (Thornton et al. 2013) and can be aligned with the buyer's own self-interests (Busse 2016). Third, research supports the finding that suppliers showing proactivity in their SSCM practices improve their competitive position and ultimately their own economic performance (Hoejmose et al. 2012). Overall, research on sustainable supplier selection demonstrates clear benefits when

the SSCM dimensions are considered in decision making, and we advocate that this translates to carrier selection decisions as well.

In general, the SSCM literature contends that the three dimensions are important, but previous research concedes that there can be conflicts between them (Kunsch et al. 2009). Questions remain about *which* sustainability dimensions are most important in supplier selection (Fallahpour et al. 2017), and more specifically, how managers *should* account for each dimension versus how managers *actually* account for each dimension. In what managers *should* do, there is conflicting agreement. Three general and normative sustainability perspectives have been advanced in efforts to guide decision making. First, the majority of SSCM studies support the *win-win perspective*, which advocates a "business case" for sustainability. The dominant assumption to this approach is that decisions which enhance the environmental and social dimensions of SSCM will improve financial performance (Golicic and Smith 2013; Matthews et al. 2016). In essence, there is an assumed causal relationship between social or environmental action and financial performance (Gao and Basal 2013; Van der Byl and Slawinski 2015). Second, the *trade-off perspective* challenges the win-win perspective by acknowledging that tensions often exist among the three dimensions of SSCM (Hahn et al. 2010, 2014; Figge and Hahn 2012). Proponents argue that carrier selection decisions should be made in light of the available options and without any predetermined preference of the SSCM dimensions (Van der Byl and Slawinski 2015). Third, the *ecological perspective* calls for decision makers to clearly prioritize preferences in carrier selection whereby the environment comes first, society second, and the economic dimension third (Markman and Krause 2016; Matthews et al. 2016; Montabon et al. 2016). The logic for this perspective is that "society's survival is dependent on fully functioning environmental ecologies and where economic systems are only part of the overall social system" (Markman and Krause 2016, 7).

Depending on which one is chosen, the three normative perspectives provide guidance for carrier selection decision making by informing managers that they *should* (1) build a compelling business case for choosing a sustainable carrier, (2) acknowledge the trade-offs that may be present with choosing a sustainable carrier, or (3) always choose the most environmentally sustainable carrier. However, predicting what managers *actually do* if they are asked to incorporate the three SSCM dimensions into their decision making constitutes a significant gap (Van der Byl and Slawinski 2015). Our research question asks, "which SSCM dimension, or combination of dimensions, is most important in carrier selection decisions?" To our knowledge, there is no empirical research that has simultaneously tested the relative importance of each of the SSCM dimensions, nor has a sufficient theoretical rationale been forwarded that gives insight into this type of managerial decision-making behavior based on preference. To understand how decision makers make value judgments in sustainable carrier selection, we turn to theoretical insights from BDT (Morton and Fasolo 2009).

Behavioral decision theory

Researchers have long been interested in how people make decisions when faced with alternative choices (Roe et al. 2001). The

evolution of BDT began in the 1950s when rational choice theory was called into question (Slovic 1995). Rather than assuming that a rational decision maker has the computational skills to calculate which alternative will maximize his or her expected utility (Bettman et al. 1998), a decision maker tries to attain a satisfactory, but not necessarily maximizing, outcome. This ushered in the informational processing approach to decision making, grounded in bounded rationality where decision makers have limitations on their capacity to process information (Simon 1955; Bettman 1979). Further evolution of BDT rationalized that because of limited cognitive capacity, decision makers use a variety of information processing and decision-making strategies (Roe et al. 2001; Jiang and Punj 2008).

There has been a growing belief among researchers that preferences of alternatives are not merely revealed in decision making. Rather, people selectively use the available information as well as selective information from memory to construct a response on the spot when they must make a choice (Slovic 1995; Bettman et al. 1998; Anderson and Clemen 2013). As such, decision makers must often cope with the difficulty of making trade-offs among alternatives, which has been a focal point of research on constructing preferences (Payne et al. 1999). While not utilized in empirical SSCM research, understanding how managers construct preference in their decision-making strategies offers critical insight.

BDT contends that in some cases, decisions can be cognitively demanding and decision makers are less inclined to take the time to consider trade-offs among different options when forming preference. In this case, decisions are made using simple “rule of thumb” heuristics and trade-offs can be avoided altogether (Morton and Fasolo 2009). Preference is formed by creating a *dominance relationship*, whereby one criteria in the choice set is elevated above all others (Bettman et al. 1998). In other words, decision making is simplified when one criterion is denoted as the single most important (Montgomery 1983). Dominance relationships are more likely to form when “crystallized values” that represent clear preferences are in the set of choice options (Schuman and Presser 1981). Even more dominant are options deemed “protected values” whereby accepting trade-offs or losses would be considered unacceptable (Luce et al. 2000). As further detailed in the proceeding section, BDT infers that a dominance relationship in carrier selection can be formed when evaluations of the three SSCM dimensions are considered in light of their salience, prior decision-making experience, and the justifiability of the dominant dimension.

HYPOTHESIS DEVELOPMENT

Unlike the three SSCM normative perspectives, BDT suggests that managers form a preference when making carrier selection decisions (Bettman et al. 1998). There are claims that the economic dimension subordinates the social and environmental dimensions based on anecdotal evidence (Goebel et al. 2012; Matthews et al. 2016) and a panel of experts (Fallahpour et al. 2017). However, BDT provides theoretical reasoning for this prediction and this study attempts to provide empirical validation. BDT offers a reasons-based view of preference, which leads to different decision strategies that managers use to screen carrier

choice alternatives. It provides the rationale that the economic dimension of SSCM will be most important because managers simplify choice by forming a dominance relationship that stems from (1) salience, (2) managerial experience, and (3) justifiability.

First, decision makers process information selectively, with attention given to the most salient dimension among a choice of options. As a result, they examine alternatives and place more significance on that dimension (Jiang and Punj 2008). Further, some dimensions may be difficult for decision makers to trade off because the possibility of a loss on that dimension can have threatening consequences (Bettman et al. 1998). Among the three SSCM dimensions, managers are more likely to see the economic dimension as the most salient in the carrier selection decision because they would perceive threatening consequences to their own firms if carriers are not economically sustainable.

Second, decision makers tend to form preference about issues that are familiar and directly experienced (Fischhoff et al. 1980). This experience allows them to evaluate preference in reference to prior outcomes (Payne et al. 1999). In most cases, a manager’s most relevant and familiar experiences likely involve traditional selection criteria rather than environmental or social performance. Past history and experience in carrier selection would likely lead managers to place more importance on the economic dimension.

Third, decisions are often evaluated, either by others to whom one is accountable or by oneself, so decision makers must often be able to justify or provide reasons for a decision (Shafir et al. 1993). Bettman et al. (1998) assert that decision makers look for a strong case of justification. Managers making carrier selection decisions must be able to justify their decision, and when given a choice, focusing on the most prominent dimension constitutes a sound argument (Irwin and Davis 1995). Additionally, the status quo nature of previous policies make decisions more defensible (Inman and Zeelenberg 2002), which would elevate the economic dimension to the most important of the three.

In sum, managers will construct preference using salience, experience and justifiability to create a dominance relationship for the economic dimension because it more clearly denotes a firm’s self-interest. Alternately, the social and environmental issues do not enjoy a dominance relationship because they reflect the effects of the firm’s actions on third parties (e.g., people and planet) (Busse 2016). Therefore,

H₁: *When other selection criteria are equal, the economic dimension of a carrier’s SSCM performance has a larger effect on a shipper’s purchase intentions than social or environmental dimensions of SSCM.*

METHODS OVERVIEW

To test this hypothesis based on our assertions of salience, experience, and justifiability, we use a series of scenario-based behavioral experiments. This approach aligns with other supply chain studies that examine human behavior and decision making (Tokar 2010; Eckerd and Bendoly 2011; Deck and Smith 2013). Experimental designs leverage the power of random assignment,

offer greater control for potential confounding conditions, enable manipulation of independent variables of interest, and maximize internal validity of the research (Knemeyer and Naylor 2011). Scenario-based experimental designs are particularly useful because they enable the study of situations where organizations may be unwilling to share details of proprietary business relationships or violate contractual obligations (Thomas et al. 2010). This research was conducted with a focus on what participants *would do* rather than on what participants *should do* in a situation that did not have an optimal solution. Therefore, participants were specifically instructed that there were no right or wrong answers. We gave this instruction to minimize social desirability bias (Fischer 1993) or other forms of influence that could prescribe a specific action.

EXPERIMENT ONE

The behavioral experiment used vignettes to manipulate the economic, environmental, and social dimensions of SSCM in a carrier selection context. Data were collected via a pencil and paper format in a common executive education setting over several sessions by the same researcher. Each independent variable had two levels of treatment (high and low) resulting in a $2 \times 2 \times 2$ factorial design. Independent variable effects were measured on the dependent variable of purchase intent, defined as the willingness to buy a specific product or service (Grewal et al. 1998; Hardesty et al. 2002).

Sample

Participants in the experiment were full-time working managers affiliated with a supply chain management executive education program. The overall sample size was 188 resulting in approximately 24 participants per cell. The sample size exceeded minimum requirements (20 participants per cell) for behavioral experiments (Hair et al. 2006). The average age of the participants was 41.3 years (standard deviation 8.4), and the average work experience was 16.9 years (standard deviation 7.5). To keep participant identities completely anonymous, no other demographic information was collected.

Procedure

Participants were randomly assigned to one of the eight distinct treatment conditions and instructed to read a multipart scenario. The first part of the scenario was designed to introduce all participants to a carrier selection situation and control potentially relevant variables of interest. Participants were given an overview about a core carrier selection decision for a long-term contract. Information about common carrier selection criteria such as cost, service, compliance, lead-times, and coverage was provided to participants for several carriers. These selection criteria descriptions were identical for all carriers being considered for selection. This part of the scenario was designed to control for known selection determinants that were not of interest in this study. All participants received this basic treatment condition.

In the second part of the scenario, independent variables were manipulated for one of the carriers under consideration. For each SSCM dimension, the carrier's performance was described relative to the other carriers being considered for selection. Therefore, all participants received a scenario with a description of high or low dimensions of economic, environmental, and social SSCM performance. All participants received various treatment conditions based on their randomly assigned group, which are provided in Appendix A.

After reading the scenario-based experimental treatments, participants completed a questionnaire. They were instructed that there were no "right" or "wrong" answers; they were simply asked how the shipper *would* respond in the scenario provided. To avoid any cueing effects, manipulation check items for the independent variables were placed after the dependent variable measures.

Scenario

The scenario in this experiment was developed consistent with Thomas et al. (2014) and utilized feedback from researchers, managers, and pretest participants. The final scenario asked participants to evaluate carriers for a potential long-term relationship. Long-term relationships are commonly used by big-box retailers (i.e., Lowe's, Target, Home Depot) in the form of routing guides that stipulate a small group of core carriers must be used for all collect freight. Therefore, to be consistent with the retailing context, we used a core carrier scenario.

Due to the potential emotional or political nature of sustainability issues and resulting concerns about social desirability bias (Fischer 1993), a projective technique was used to allow participants to assess the scenario and answer questions from the perspective of another group (i.e., participants were asked what the shipper would do in the scenario provided). This technique enables participants to respond to experimental treatment conditions without directly incriminating themselves or their employers and thus increases the likelihood of authentic responses free from peer group effects, social judgment, or other external influences. The approach has been shown to offer meaningful insights into managerial behaviors and corporate strategies (Fischer 1993; Chandy et al. 2003; Antia et al. 2006).

Measures

Measures for the independent variable manipulation checks and the dependent variables were modified from existing scales. The modifications were primarily designed to inject language from the scenarios into the items. Manipulation check item scales for social, environmental, and economic SSCM dimensions were modified from Choi and Ng (2011). Dependent variable scale items for purchase intent were modified from Grewal et al. (1998) and Hardesty et al. (2002). All scales items used are provided in Appendix B.

Measure validation

To ensure measures used in the experiment were valid and reliable, scale validation procedures were executed. Principal

component analysis with a Varimax rotation was performed. The items loaded onto the anticipated factor structure, no cross-loadings were present, and factor loadings exceeded 0.70 (Carter and Stevens 2007). Cronbach's alpha values exceeded .90 and demonstrated interitem reliability (Nunnally and Bernstein 1994). Therefore, the scales were deemed acceptable for a behavioral experiment.

Manipulation checks

Manipulation checks were performed to ensure the treatment conditions were effective (Bachrach and Bendoly 2011). There was a significant main effect for the economic SSCM dimension manipulation ($F = 2,804.47$; $M_{\text{high}} \text{ sustain} = 6.32 > M_{\text{low}} \text{ sustain} = 1.33$; $p < .001$), a significant main effect for the environmental SSCM dimension manipulation ($F = 693.25$; $M_{\text{high}} \text{ sustain} = 6.13 > M_{\text{low}} \text{ sustain} = 1.74$; $p < .001$), and a significant effect for the social SSCM dimension manipulation ($F = 296.45$; $M_{\text{high}} \text{ sustain} = 5.69 > M_{\text{low}} \text{ sustain} = 2.33$; $p < .001$). Results demonstrate that the treatment conditions worked as intended.

Realism checks

To ensure the treatment conditions were realistic enough to evoke authentic responses from the participants, realism checks were performed (Dabholkar 1994). Participants were asked if they could imagine themselves in the carrier selection situation and to assess the realism of the vignettes. Responses demonstrate the experimental treatment conditions were authentic with a mean score of 5.38 on a 7-point realism check scale.

Confounding check

A confounding check was performed to ensure the independent variable manipulations were clean and did not influence each other (Bachrach and Bendoly 2011). Consistent with Perdue and Summers (1986), interactions between the manipulation group factors on the measures of those factors were assessed. No significant interactions were present (all $ps > .05$), so the experimental results could be interpreted in a straightforward manner.

Main analysis

An analysis of variance (ANOVA) was performed on the dependent variable of purchase intent with economic, environmental, and social SSCM dimensions as factors. Results show that an increase in the economic ($F = 186.36$; $p < .001$; effect size = 0.509), environmental ($F = 22.41$; $p < .001$; effect size = 0.111), and social ($F = 8.20$; $p < .01$; effect size = 0.044) dimensions lead to an increase in purchase intent. All results are shown in Table 1.

While the main effects suggest that all three dimensions of a carrier's SSCM have a significant effect on a shipper's purchase intentions, our interest is to offer more clarity about the relative importance of each dimension of SSCM. Therefore, we use effect size as a complement to statistical hypothesis testing. Effect sizes are quite valuable because, unlike statistical significance tests, they are unaffected by sample size increases and

Table 1: Summary of experiment one

ANOVA results		
Independent variables	F-value	Effect size
Main effects		
Financial sustainability (FIN)	186.364***	0.509
Environmental sustainability (ENV)	22.407***	0.111
Social sustainability (SOC)	8.203**	0.044
Two-way interactions		
FIN × ENV	NS	–
FIN × SOC	NS	–
ENV × SOC	NS	–
Three-way interaction		
FIN × ENV × SOC	NS	–

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

enable researchers to determine if their results are large enough to be important in practice (Ellis and Steyn 2003). As effect size measures are standardized, they enable direct comparisons between experimental groups. When considering the relationships in this experiment, we find the effect sizes of environmental (partial eta squared = 0.111) and social (partial eta squared = 0.044) dimensions relatively small compared to the effect size of the economic dimension (partial eta squared = 0.509). These results support H_1 , which predicted that the economic dimension of SSCM appears to be the most meaningful dimension when selecting a new carrier.

In sum, we find evidence to support the theoretical predictions of BDT. When managers must combine and process information to form preference, they elevate the economic dimension over other dimensions of sustainability. As predicted, carrier selection appears to be driven by a dominance relationship (Montgomery 1983). The following two experiments attempt to diminish the dominance relationship by altering the salience, experience and justifiability mechanisms.

EXPERIMENT TWO

This experiment builds on the findings of the first experiment by changing the nature of the shipper–carrier relationship participants are asked to evaluate. We test the veracity of our hypothesis by attempting to diminish the salience and justifiability effect of the economic dimension. Rather than assessing core carriers for a potential long-term contract, experiment two's context focuses on a short-term relationship where a carrier is only temporarily needed to help address a few weeks of peak seasonal demand. The dominance relationship may not be as pronounced because this selection is less important and hence more justifiable, which in turn could alter the significance of the economic dimension in a carrier selection decision.

Replication overview

The manipulations of the SSCM dimensions, the dependent variables, and the other control variables all remained unchanged,

resulting in a nearly identical $2 \times 2 \times 2$ factorial design. Therefore, this second experiment replicates most of the first experiment. This experiment differs only in the short-term nature of the shipper–carrier relationship and it uses different participants (see Appendix C).

Sample

Participants in the second experiment were full-time working managers affiliated with a supply chain management executive education program. The overall sample size was 193 and exceeded minimum requirements for behavioral experiments (Hair et al. 2006). On average, participants were 40.2 years old (standard deviation 8.4) with 15.6 years (standard deviation 7.29) of work experience.

Analysis summary

Like the first experiment, tests were performed to ensure that the measures were valid, that the manipulations worked as intended, that the scenario was deemed realistic by the participants, and that the manipulations were not confounded. All tests and checks showed that the results of the second experiment could be interpreted in a straightforward manner.

An ANOVA was performed to test for effects of SSCM dimensions on purchase intentions. Like results of experiment one, main effects were observed for the economic dimension ($F = 296.69$; $p < .001$; effect size = 0.615), the environmental dimension ($F = 13.86$; $p < .001$; effect size = 0.069), and the social dimension ($F = 21.39$; $p < .001$; effect size = 0.103). All results are shown in Table 2.

Results of this experiment suggest that all three SSCM dimensions have a significant positive impact on purchase intentions. However, like the previous experiment, effect sizes suggest economic SSCM (partial eta squared = 0.615) is the largest driver of purchase intentions. The environmental (partial eta squared = 0.069) and social (partial eta squared = 0.103) dimensions are smaller and have less effect on the carrier selection decision. Consistent with experiment one results, this second

Table 2: Summary of experiment two

ANOVA results		
Independent variables	F-value	Effect size
Main effects		
Financial sustainability (FIN)	296.693***	0.615
Environmental sustainability (ENV)	13.864***	0.069
Social sustainability (SOC)	21.399***	0.103
Two-way interactions		
FIN \times ENV	1.816	0.010
FIN \times SOC	NS	–
ENV \times SOC	NS	–
Three-way interaction		
FIN \times ENV \times SOC	6.502*	0.034

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

experiment also supports H_1 . Although the type of shipper–carrier relationship was modified in experiment two (i.e., moving from a long-term core carrier selection scenario to a short-term transactional relationship), the similar results suggest a dominance relationship, with priority placed on the economic dimension.

EXPERIMENT THREE

The third experiment seeks to test the hypothesis offered with two additional changes that could alter preference according to BDT. To diminish the potential dominance relationship, this study tempered the possibility of prior experience being a factor. Rather than using current managers, we veer from a managerial sample to study the impact of experience. Participants in this experiment were undergraduate supply chain management majors in their senior year who completed prior coursework in sourcing, transportation, relationship management, and sustainability. All participants did have some supply chain management experience, either working full-time time or completing full-time internships in supply chain management roles. Thus, participants were able to understand and respond to the experimental treatment conditions (Thomas 2011), but they did not have a significant amount of experience to draw from in constructing preference.

A second means to influence preference was to increase justifiability of the decision by providing additional guidance to participants. Previous research advocates for the importance of outlining operating principles—not to prescribe specific actions, but to articulate the organization’s values as they relate to SSCM (Wu and Pagell 2011). In the BDT literature, expert opinions have been utilized to influence which dimensions should be weighted more heavily in a choice context (Baron 1997). Therefore, in this experiment, participants were provided with the Ten Principles of the United Nations Global Compact (UNGC) for Corporate Sustainability and directed to select carriers that conform to these guidelines (see Appendix D). While the UNGC offers more general guidelines, it is the world’s largest sustainability initiative and offers a well-established standard (Goebel et al. 2012). The use of these guidelines could provide justification for elevating the importance of the social and environmental dimensions.

Procedure

The procedure was identical to the first experiment with one exception. In this third experiment, participants were also given explicit guidance about the shipper’s general sustainability policy. Procedurally, the only difference between the first and third experiments was the explicit sustainability policy described in the scenario.

Analysis

As with the previous experiments, analysis of the third experiment showed that all standard experimental tests and checks worked as intended and results can be interpreted without concern.

ANOVA results are similar to the previous experiments. Main effects of economic ($F = 116.596$; $p < .001$; effect size = 0.434)

and social ($F = 26.855$; $p < .001$; effect size = 0.150) dimensions of SSCM were observed on the dependent variable of purchase intent. The environmental dimension of SSCM did not exhibit a significant effect ($p > .05$). All results are shown in Table 3.

Similar to the first two experiments, results of this study confirm our hypothesis. Effect sizes show that the economic dimension (partial eta squared = 0.434) is the largest driver of purchase intentions. The environmental dimension of SSCM has no statistically significant effect ($p > .05$), and the social dimension of SSCM has a much smaller effect (partial eta squared = 0.150) on purchase intentions. Although this third experiment used a student sample to alter experience and provided more explicit guidance to alter the justifiability mechanism, results of this experiment show a pattern that is consistent with the previous experiments suggesting a dominance relationship. The series of experiments highlight that decision makers focus on the economic dimension of SSCM, regardless of how the choice set is framed or the decision maker's experience. This clear preference is consistent with "crystalized values" in BDT research (Schuman and Presser 1981).

DISCUSSION

There have been calls for more theoretical clarity and empirical refinement in examining SSCM (Seuring and Müller 2008; Kirchoff et al. 2016), and this research answers that call in carrier selection decisions. Understanding how carrier selection decisions are made, especially in the context of SSCM, offers critical insight into a substantive part of the economy. With looming challenges in the industry related to safety issues and driver shortages (Prockl et al. 2017), pressure to lower the environmental footprint of transportation activities (Marks 2015), and a more complex regulatory landscape that will drive up costs (Chao 2015), all three SSCM dimensions are being impacted simultaneously. How decision makers shift their thinking from transportation activities being a price-driven commodity to a strategic consideration in SSCM decisions can highlight the underlying

theoretical mechanisms related to preference and choice decision heuristics.

This research applied logic from BDT to empirically examine the importance of the three SSCM dimensions in carrier selection. The objective of this research was not to assess the legitimacy of managerial beliefs, but to acknowledge that managerial preferences exist and determine how they are prioritized. We offer the field a better understanding of SSCM by focusing on what managers *actually* do in carrier selection as opposed to what managers *should* do based on the prescriptive perspectives. BDT provides a strong theoretical rationale that has been underutilized in SSCM research. Understanding how preference is constructed provides a powerful lens to understand how decisions are made and how SSCM dimensions are prioritized.

All three experiments confirmed our hypothesis that the economic dimension of SSCM would be most important in a carrier selection decision. Each dimension of SSCM statistically impacted purchase intent, but the economic dimension was the most dominant in the managers' decision making. BDT contends that decision makers can construct a dominance relationship when they focus on a single objective or an assumed state of the world when reasoning through a decision problem (Payne et al. 1999). The significance of the dominance relationship was underscored in experiments 2 and 3. Both attempted to influence preference and diminish the dominance relationship by altering the experience, salience, and justifiability mechanisms. Results confirm that the environmental and social dimensions still impact purchase intent, but to a much lesser degree than the economic dimension.

Because this research focused on how shippers make carrier selection decisions, it has an outside-in focus. In other words, decision makers are looking at the SSCM performance of outside firms to assess whether they are going to include them as suppliers in their own operations. There are possibly a different set of decision heuristics at work when there is an inside-out SSCM focus (i.e., managers are making internal SSCM decisions about their own companies' operations that will be reflected to outside supply chain members). If this is the case, the SSCM dimensions could be assessed quite differently. Trade-offs could be resolved with strategies that promote compromise and a longer-term view. While SSCM broadly encompasses the economic, social, and environmental dimensions, future research should parse out the differences between outside-in versus inside-out decisions.

This research also highlights theoretical implications for the three normative SSCM perspectives. Our findings do not clearly align with any of them, but we want to be careful not to dismiss their significance. While different, these prescriptive frameworks are important to advance SSCM, and they can also be framed within BDT logic. In advancing the win-win perspective, BDT infers that decision makers would not make trade-offs among the three dimensions because of their assertion that environmental and social dimensions can enhance firm performance. This research did not provide a "business case" in terms of a causal relationship between the SSCM dimensions and performance and to the contrary, most of the manipulations involved trade-offs between the dimensions. As the opponents of the win-win perspective claim, managers did subordinate the environmental and social dimensions to the economic dimension by creating a dominance relationship. While some could argue that this view

Table 3: Summary of experiment three

ANOVA results		
Independent variables	F-value	Effect size
Main effects		
Financial sustainability (FIN)	116.596***	0.434
Environmental sustainability (ENV)	NS	NS
Social sustainability (SOC)	26.855**	0.150
Two-way interactions		
FIN × ENV	NS	–
FIN × SOC	NS	–
ENV × SOC	NS	–
Three-way interaction		
FIN × ENV × SOC	7.094**	0.045

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

stymies the progress that businesses should make, the win–win perspective was a first step to a dialogue about how companies can and should consider sustainability in their business models (Elkington 1997). This is still an important framework to consider, as recent research notes that with the exception of the “exemplar” firms, most are not widely embracing SSCM practices (Kirchoff et al. 2016). It will likely take more discussion about building a business case for firms to address the low-hanging fruit that comes with SSCM investments.

Both the trade-off and ecological perspectives point to a significant element of critical theory. The logic is that if the SSCM paradigm that guides research changes, then changes in practice are more likely to follow (Montabon et al. 2016). This reflects research that suggests theory can shape social realities and eventually become self-fulfilling (Marti and Gond 2017). In advocating for change, proponents of these perspectives could integrate existing theory to aid in understanding underlying mechanisms that can be a focus of change. For instance, because a dominance relationship is currently at play, the following insights from BDT could be applied:

- The proponents of the trade-off perspective want managers to think about the reality of the conflicts that can come from SSCM considerations (Matthews et al. 2016). BDT suggests that managers need to rationalize how deficiencies in one sustainability dimension can be offset by strengths in the others without forming a predetermined preference to any one of the dimensions (Payne et al. 1999; Morton and Fasolo 2009). Highlighting how and under what conditions managers use more complex decision strategies can lead to insights that help influence decision makers to consider offsetting deficiencies in the economic dimension for strengths in the other two dimensions (Bettman et al. 1993).
- For the ecological perspective proponents, the environmental dimension should replace the economic dimension as the dominance relationship. BDT further infers that the environmental dimension would be considered a “protected value” (Luce et al. 2000), where accepting trade-offs or losses would be considered unacceptable. Utilizing BDT could aid in understanding how decision makers construct preference based on deontological rules for behavior that leads to decisions grounded in a sense of duty or obligation.

In short, theoretical understanding offered by BDT informs how selection decisions can be influenced, framed, or processed for desired outcomes. Future research should consider other theoretical frameworks for additional insight.

Limitations

Although the experimental approaches used in this research maximize internal validity and contribute to our theoretical understanding of SSCM effects on carrier selection, the method does have limitations. In particular, experimental manipulations in laboratory settings are notoriously weak, so researchers often need to make scenario-based treatments more extreme to ensure participants can perceive the intended treatment conditions. Realism checks are used to assess whether the manipulations are too

extreme or too contrived to evoke authentic responses from participants, but a laboratory setting can never maximize realism. Future research should address this limitation with other complementary multimethod approaches that triangulate results and offset inherent methodological weaknesses.

In framing the scenarios, we took an instrumental perspective (Donaldson and Preston 1995). That is, we were explicit in the scenarios that respondents should do what is in the best interest of the firm for its long-term success. While we contend this most aptly captures empirical reality in a retail decision-making setting, we potentially narrowed their range of options. For instance, establishing “long-term success” as the goal prevented respondents from making a decision that could foster some greater good. Future SSCM studies could take a more utilitarianism approach.

It is typically assumed that sociopsychological preferences and supplier selection decisions are independent (Carter et al. 2010), so limited demographic information was collected in the experiments and no personal bias for or against sustainability was reported by participants. However, some research is beginning to show that personal characteristics do affect selection decisions (Carter et al. 2010; Griffis et al. 2014). Given the power of random assignment and the replication of our results across multiple samples and experiments, we think our research findings are robust and can be interpreted without concern. Future research opportunities exist to probe deeper into potential effects of individual characteristics in SSCM research. Given the often political and emotional nature of sustainability advocacy, additional investigation that builds on our preliminary findings is appropriate.

Managerial and policy implications

A robust transportation system is not only the cornerstone of an effective supply chain, but also the lifeblood of a healthy economy. It is important that research continues to inform carriers and policy makers so that they can work to strike a balance between the economic efficiency needed for freight utilization and capacity with the focus needed to address the environmental and social implications of transportation decisions. As shippers become more accountable for the sustainability impacts of upstream suppliers, carrier selection decisions become an increasingly important mechanism for managing this delicate balance.

This research provides implications for carriers. First, they should note that their economic sustainability is the most impactful SSCM dimension in the carrier selection decision—effect sizes from the experiments suggest that it matters several times more. They should note, however, that social and environmental investments still impact purchase intent, but to a lesser extent. Carriers can build capabilities around the other two dimensions of SSCM to further differentiate themselves. The larger implication is that investments in social and environmental initiatives can be positive in selection decisions; however, they can turn detrimental if they weaken a carrier’s financials. If investments are made to address more immediate SSCM issues related to driver retention or environmental regulatory mandates, then carriers would be wise to provide more information (e.g., service levels, delivery statistics, capital investments) to reduce risk in the shippers’ decision making.

Shippers should note how embedded the dominance relationship is for prioritizing the economic dimension of SSCM in carrier selection decisions. Should shippers want to shift to taking a more holistic SSCM view of the carrier selection decision and align more with the trade-off or ecological perspective, there is a significant mindset hurdle to overcome. The dominance relationship was evident even when experience was less of a factor and when explicit guidance to consider environmental and social SSCM dimensions was provided. To crystalize the other dimensions as significant, it is critical for shippers to understand the justifiability mechanism in the way that managers construct preference. “Choice” implies responsibility and with that comes the desire to be able to explain one’s decisions (Irwin and Davis 1995). If corporate goals call for moving beyond traditional carrier selection criteria, shippers would need to consider aligning incentives and rewards that encourage decisions in line with social and/or environmental SSCM goals. In addition to policy changes and new supplier selection guidelines, communications strategies should be deployed with the aim of convincing decision makers that there is a good reason for inclusion of social and environmental criteria (Inman and Zeelenberg 2002).

Transportation policy in the United States has been rapidly evolving, especially as it relates to environmental and social SSCM. Policy makers need to be aware that costly initiatives may negatively impact equipment utilization and viability for the segment of carriers that represents the majority of transportation capacity. The Federal Motor Carrier Safety Administration’s Electronic Logging Device mandate that was created to improve safety within the transportation industry is a controversial topic (Cubitt 2016). While large carriers have led the implementation change, analysts predict that small carriers—which make up the majority of the truck freight capacity—will be hurt by increased costs to retain and recruit drivers (Chao 2015). Additionally, the Environmental Protection Agency has proposed rules for the trucking industry that will cut oil consumption and CO₂ emissions, but this comes with higher capital and maintenance costs (Oge 2016). In sum, if policy mandates adversely affect the economic sustainability of smaller carriers, our research suggests that economically disadvantaged carriers will not be selected by shippers when there is capacity in the system and shippers have options.

If a large number of small carriers cannot see the business case for investing in SSCM, some might argue that policy mandates may be the only avenue to affect change. However, regulators must be mindful of the impact that these regulations will have on the carriers’ ability to operate profitably. Because of the tremendous impact the transportation system has on a nation’s economy, special attention should be given to the speed and intensity of increasing regulations. If regulatory mandates weaken the small carriers’ economic sustainability, shippers will likely scramble to negotiate contracts with the big carriers, which may further exacerbate the looming capacity problem.

An alternative argument to the need for policy mandates should also be considered. Results of this research suggest that market mechanisms in the transportation industry may be effective in achieving meaningful sustainability progress. Because the research finds that each dimension of sustainability positively impacted carrier selection, shippers tend to naturally select carriers with better sustainability performance. Over time, it is not

difficult to conceive that carriers that invest in sustainability will prosper and those that ignore market forces will dwindle in number. The biggest differences between sustainable progress through market demand or mandates are time and competing interests, so it is critical that shippers, carriers, policy makers, and researchers engage in active dialogue and work together to balance the SSCM dimensions to maintain an efficient, effective, and sustainable transportation system.

APPENDIX A:

Experiment one scenario manipulations

Directions

In the following scenario, a common transportation sourcing situation is described. Assume all scenario descriptions are accurate and trustworthy. After you read the scenario, please answer each question. As you answer each question, predict how the retailer would act in this type of situation. Please do not base your answers on how you think the retailer should approach the situation, but rather on how they actually would approach the situation.

Scenario

Imagine that a large retailer is conducting its annual review of truckload carriers. Based on this review process, the retailer has decided to add another transportation service provider to its preferred group of core carriers. The new core carrier will receive a long-term, multiyear contract and will be expected to partner with the retailer. After evaluating numerous carrier proposals, the retailer has narrowed down their potential options to six remaining truckload carriers. All six carriers provide similar levels of acceptable coverage, compliance, service, lead-times, and pricing. Senior management has directed the transportation group to select a core carrier based on a low cost-per-mile price and to consider other relevant attributes that will lead to long-term success for the retailer.

Spartan Transportation Services (STS) is one of the six remaining carriers. Compared to the other carriers the retailer is considering, STS is financially stable (*unstable*). STS continually has strong (*weak*) revenue growth, positive (*negative*) cash flows, and healthy (*unhealthy*) levels of profitability. The company has low (high) debt levels and has never (*frequently*) had to take out emergency loans in order to maintain operations.

Compared to the other carriers that the retailer is considering, STS has made large (*no*) investments in “green” business practices. For example, STS utilizes newer (*older*) engines with the highest (*lowest*) fuel efficiency and lowest (*highest*) emissions. The STS fleet of trucks also uses newer (*older*) body designs with exceptional (*poor*) aerodynamics. As a result of their efforts, STS has the smallest (*largest*) carbon footprint among the final six carriers and exceeds (*but still meets*) minimum legal compliance standards.

Compared to the other carriers that the retailer is considering, STS has a substantial (*limited*) focus on the welfare of their employees and local communities. For example, STS makes large (*small*) investments in training and

equipment to ensure employee safety. STS also offers health and retirement benefits that exceed (*are below*) industry averages. In terms of philanthropy and community development, STS has made large (*no*) investments in local parks and schools.

APPENDIX B:

Measures for dependent and independent variables

Purchase Intent (Grewal et al. 1998; Hardesty et al. 2002):

Cronbach's Alpha: .965

- The retailer's willingness to select STS as their new carrier is very high.
- The retailer is very likely to purchase transportation services from STS.
- The probability that the retailer would consider selecting STS is very high.

Financial Sustainability (Choi and Ng 2011):

Cronbach's Alpha: .975

- STS has an excellent financial record.
- STS operates in a financially sustainable manner.

Environmental Sustainability (Choi and Ng 2011):

Cronbach's Alpha: .981

- STS has an excellent environmental record.
- STS operates in an environmentally sustainable manner.

Social Sustainability (Choi and Ng 2011):

Cronbach's Alpha: .937

- STS has an excellent corporate social responsibility record.
- STS operates in a socially sustainable manner.

APPENDIX C:

Experiment two scenario manipulations

Directions

In the following scenario, a common transportation sourcing situation is described. Assume all scenario descriptions are accurate and trustworthy. After you read the scenario, please answer each question. As you answer each question, predict how the retailer would act in this type of situation. Please do not base your answers on how you think the retailer should approach the situation, but rather on how they actually would approach the situation.

Scenario

Imagine that a large retailer is approaching a Holiday season where demand will surge. The retailer normally uses an established group of core truckload carriers for all their transportation

needs, but their current group of carriers does not have sufficient capacity available to handle all store deliveries during a two two-period. Therefore, the retailer is searching for a short-term carrier to utilize for only a few weeks during the holiday rush. The retailer has no intention of using the short-term carrier in the future. After evaluating numerous carrier proposals, the retailer has narrowed down their potential options to six remaining truckload carriers. All six carriers provide similar levels of acceptable coverage, compliance, service, lead-times, and pricing. The six remaining carriers also have sufficient capacity available during the dates required and all carriers will be able to delivery shipments to stores as needed. Senior management has directed the transportation group to select a core carrier based on a low cost-per-mile price and to consider other relevant attributes that will lead to long-term success for the retailer.

Spartan Transportation Services (STS) is one of the six remaining carriers. Compared to the other carriers the retailer is considering, STS is financially stable (*unstable*). STS continually has strong (*weak*) revenue growth, positive (*negative*) cash flows, and healthy (*unhealthy*) levels of profitability. The company has low (*high*) debt levels and has never (*frequently*) had to take out emergency loans in order to maintain operations.

Compared to the other carriers that the retailer is considering, STS has made large (*no*) investments in "green" business practices. For example, STS utilizes newer (*older*) engines with the highest (*lowest*) fuel efficiency and lowest (*highest*) emissions. The STS fleet of trucks also uses newer (*older*) body designs with exceptional (*poor*) aerodynamics. As a result of their efforts, STS has the smallest (*largest*) carbon footprint among the final six carriers and exceeds (*but still meets*) minimum legal compliance standards.

Compared to the other carriers that the retailer is considering, STS has a substantial (*limited*) focus on the welfare of their employees and local communities. For example, STS makes large (*small*) investments in training and equipment to ensure employee safety. STS also offers health care and retirement benefits that exceed (*are below*) industry averages. In terms of philanthropy and community development, STS has made large (*no*) investments in local parks and schools.

APPENDIX D:

Experiment three scenario manipulations

Directions

In the following scenario, a common transportation sourcing situation is described. Assume all scenario descriptions are accurate and trustworthy. After you read the scenario, please answer each question. As you answer each question, predict how the retailer would act in this type of situation. Please do not base your answers on how you think the retailer should approach the situation, but rather on how they actually would approach the situation.

Scenario

Imagine that a large retailer is conducting its annual review of truckload carriers. Based on this review process, the retailer has

decided to add another transportation service provider to its preferred group of core carriers. The new core carrier will receive a long-term, multiyear contract and will be expected to partner with the retailer. After evaluating numerous carrier proposals, the retailer has narrowed down their potential options to six remaining truckload carriers. All six carriers provide similar levels of acceptable coverage, compliance, service, lead-times, and pricing. Senior management has directed the transportation group to select a core carrier based on a low cost-per-mile price, other relevant attributes that will lead to long-term success for the retailer, and conformance with the following Ten Principles of the United Nations Global Compact UNGC:

Human rights

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and

Principle 2: make sure that they are not complicit in human rights abuses.

Labor

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining; Principle 4: the elimination of all forms of forced and compulsory labor;

Principle 5: the effective abolition of child labor; and

Principle 6: the elimination of discrimination in respect of employment and occupation.

Environment

Principle 7: Businesses should support a precautionary approach to environmental challenges;

Principle 8: undertake initiatives to promote greater environmental responsibility; and

Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Anticorruption

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Spartan Transportation Services (STS) is one of the six remaining carriers. Compared to the other carriers the retailer is considering, STS is financially stable (*unstable*). STS continually has strong (*weak*) revenue growth, positive (*negative*) cash flows, and healthy (*unhealthy*) levels of profitability. The company has low (*high*) debt levels and has never (*frequently*) had to take out emergency loans in order to maintain operations.

Compared to the other carriers that the retailer is considering, STS has made large (*no*) investments in “green” business practices. For example, STS utilizes newer (*older*) engines with the highest (*lowest*) fuel efficiency and lowest (*highest*) emissions. The STS fleet of trucks also uses newer (*older*) body designs with exceptional (*poor*) aerodynamics. As a result of their efforts, STS has the smallest (*largest*) carbon footprint among the final six carriers and exceeds (*but still meets*) minimum legal compliance standards.

Compared to the other carriers that the retailer is considering, STS has a substantial (*limited*) focus on the welfare of their employees and local communities. For example, STS makes large (*small*) investments in training and equipment to ensure employee safety. STS also offers health care and retirement benefits that exceed (*are below*) industry averages. In terms of

philanthropy and community development, STS has made large (*no*) investments in local parks and schools.

REFERENCES

- Anderson, R., and Clemen, R. 2013. “Toward an Improved Methodology to Construct and Reconcile Decision Analytic Preference Judgments.” *Decision Analysis* 10(2):121–34.
- Antia, K.D., Bergen, M.E., Dutta, S., and Fisher, R.J. 2006. “How Does Enforcement Deter Gray Market Incidence?” *Journal of Marketing* 70(1):92–106.
- Bachrach, D.G., and Bendoly, E. 2011. “Rigor in Behavioral Experiments: A Basic Primer for Supply Chain Management Researchers.” *Journal of Supply Chain Management* 47(3): 5–8.
- Bardi, E. 1973. “Carrier Selection From One Mode.” *Transportation Journal* 13(1):23–29.
- Baron, J. 1997. “Biases in the Quantitative Measurement of Values for Public Decisions.” *Psychological Bulletin* 122:72–88.
- Bettman, J.R. 1979. *Information Processing Theory of Consumer Choice*. Boston, MA: Addison Wesley.
- Bettman, J.R., Johnson, E.J., Luce, M.F., and Payne, J.W. 1993. “Correlation, Conflict, and Choice.” *Journal of Experimental Psychology-Learning Memory and Cognition* 19(4):931–51.
- Bettman, J.R., Luce, M.F., and Payne, J.W. 1998. “Constructive Consumer Choice Processes.” *Journal of Consumer Research* 25(3):187–217.
- Busse, C. 2016. “Doing Well by Doing Good? The Self-Interest of Buying Firms and Sustainable Supply Chain Management.” *Journal of Supply Chain Management* 52(2):28–47.
- Cantor, D., MacDonald, J., and Crum, M. 2011. “The Influence of Workplace Justice Perceptions on Commercial Driver Turnover Intentions.” *Journal of Business Logistics* 32(3):274–86.
- Carter, C.R., and Stevens, C.K. 2007. “Electronic Reverse Auction Configuration and Its Impact on Buyer Price and Supplier Perceptions of Opportunism: A Laboratory Experiment.” *Journal of Operations Management* 25(5):1035–54.
- Carter, J.R., Maltz, A., Goh, M., and Yan, T. 2010. “Impact of Culture on Supplier Selection Decision.” *International Journal of Logistics Management* 21(3):353–74.
- Chandy, R.K., Prabhu, J.C., and Antia, K.D. 2003. “What Will the Future Bring? Dominance, Technology Expectations, and Radical Innovation.” *Journal of Marketing* 67(3):1–18.
- Chao, L. 2015. “Truckers Get Two-Year Deadline for Electronic Logging Devices.” *Wall Street Journal*. <https://www.wsj.com/articles/truckers-get-two-year-deadline-for-electronic-logging-devices-1449779798>
- Choi, S., and Ng, A. 2011. “Environmental and Economic Dimensions of Sustainability and Price Effects on Consumer Responses.” *Journal of Business Ethics* 104(2):269–82.
- Compeau, M. 2010. “How an Industry Survived the Recession.” <http://www.forbes.com/sites/marcompeau/2012/02/10/how-an-industry-survived-the-recession/#3bcffdac6508>
- Cubitt, B. 2016. “ELD Survey: The Data, the Facts and How ELDs Affect Carriers.” *Logistics Viewpoints*. <https://logisticsviewpoints.com/2016/09/22/eld-survey-the-data-the-facts-and-how-elds-affect-carriers/>

- Dabholkar, P.A. 1994. "Incorporating Choice Into an Attitudinal Framework: Analyzing Models of Mental Comparison Processes." *Journal of Consumer Research* 21(1):100–18.
- Deck, C., and Smith, V. 2013. "Using Laboratory Experiments in Logistics and Supply Chain Research." *Journal of Business Logistics* 34(1):6–14.
- Donaldson, T., and Preston, L.E. 1995. "The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications." *Academy of Management Review* 20(1):65–91.
- Drumwright, M. 1994. "Socially Responsible Organizational Buying: Environmental Concern as a Noneconomic Buying Criterion." *Journal of Marketing* 58(3):1–19.
- Dubey, R., Gunasekaran, A., Childe, S.J., Papadopoulos, T., and Wamba, S.F. 2017. "World Class Sustainable Supply Chain Management: Critical Review and Further Research Directions." *International Journal of Logistics Management* 28(2):332–62.
- Eckerd, S., and Bendoly, E. 2011. "Introduction to the Discussion Forum on Using Experiments in Supply Chain Management Research." *Journal of Supply Chain Management* 47(3):3–4.
- Elkington, J. 1997. *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*. Gabriola, BC: New Society Publishers.
- Ellis, S., and Steyn, H. 2003. "Practical Significance (Effect Sizes) Versus or in Combination With Statistical Significance (P-Values)." *Journal of the Southern African Institute for Management Scientists* 12(4):51–53.
- Fallahpour, A., Olugu, E.U., Musa, S.N., Wong, K.Y., and Noori, S. 2017. "A Decision Support Model for Sustainable Supplier Selection in Sustainable Supply Chain Management." *Computers & Industrial Engineering* 105(2):391–410.
- Figge, F., and Hahn, T. 2012. "Is Green and Profitable Sustainable? Assessing the Trade-Off Between Economic and Environmental Aspects." *International Journal of Production Economics* 140(1):92–102.
- Fischer, R.J. 1993. "Social Desirability Bias and the Validity of Indirect Questioning." *Journal of Consumer Research* 20(2):303–15.
- Fischhoff, B., Slovic, P., and Lichtenstein, S. 1980. "Knowing What You Want: Measuring Labile Values." In *Cognitive Processes in Choice and Decision Behavior*, edited by T.S. Wallsten, 117–41. Hillsdale, NJ: Lawrence Erlbaum.
- Foerstl, K., Azadegan, A., Leppelt, T., and Hartmann, E.. 2015. "Drivers of Supplier Sustainability: Moving Beyond Compliance to Commitment." *Journal of Supply Chain Management* 51(1):67–92.
- Gao, J., and Basal, P. 2013. "Instrumental and Integrative Logics in Business Sustainability." *Journal of Business Ethics* 112(2):241–55.
- Genovese, A., Koh, L., Bruno, G., and Esposito, E. 2013. "Greener Supplier Selection: State of the Art and Some Empirical Evidence." *International Journal of Production Research* 51(10):2868–86.
- Goebel, P., Reuter, C., Pibernik, R., and Sichtmann, C. 2012. "The Influence of Ethical Culture on Supplier Selection in the Context of Sustainable Sourcing." *International Journal of Production Economics* 140(1):7–17.
- Golicic, S.L., and 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.
- Grewal, D., Monroe, K.B., and Krishnan, R. 1998. "The Effects of Price-Comparison Advertising on Buyers' Perceptions of Acquisition Value, Transaction Value, and Behavioral Intentions." *Journal of Marketing* 62(2):46–59.
- Griffis, S.E., Autry, C.W., Thornton, L.M., and Brik, A. 2014. "Assessing Antecedents of Socially Responsible Supplier Selection in Three Global Supply Chain Contexts." *Decision Sciences* 45:1187–215.
- Hahn, T., Figge, F., Pinkse, J., and Preuss, L. 2010. "Trade-Offs in Corporate Sustainability: You Can't Have Your Cake and Eat It." *Business Strategy & the Environment* 19(4):217–29.
- Hahn, T., Preuss, L., Pinkse, J., and Figge, F. 2014. "Cognitive Frames in Corporate Sustainability: Managerial Sensemaking With Paradoxical and Business Case Frames." *Academy of Management Review* 39(4):463–87.
- Hair, J.F., Black, W.C., Anderson, R.E., and Tatham, R.L. 2006. *Multivariate Data Analysis*. 6th ed. Upper Saddle River, NJ: Person Prentice Hall.
- Handfield, R., Sroufe, R., and Walton, S. 2005. "Integrating Environmental Management and Supply Chain Strategies." *Business Strategy & the Environment* 14(1):1–19.
- Hardesty, D.M., Carlson, J.P., and Bearden, W.O. 2002. "Brand Familiarity and Invoice Price Effects on Consumer Evaluations: The Moderating Role of Skepticism Toward Advertising." *Journal of Advertising* 21(2):1–15.
- Hoejmose, S., Brammer, S., and Millington, A. 2012. "'Green' Supply Chain Management: The Role of Trust and Top Management in B2B and B2C Markets." *Industrial Marketing Management* 41(4):609–20.
- Holland, S., Hughes, J., Knittel, C., and Parker, N. 2015. "Some Inconvenient Truths About Climate Change Policy: The Distributional Impacts of Transportation Policies." *Review of Economics & Statistics* 97(5):1052–69.
- Inman, J., and Zeelenberg, M. 2002. "Regret in Repeat Purchase Versus Switching Decisions: The Attenuating Role of Decision Justifiability." *Journal of Consumer Research* 29(1):116–28.
- Irwin, J., and Davis, J. 1995. "Choice Matching Preference Reversals in Groups: Consensus Processes and Justification-Based Reasoning." *Organizational Behavior and Human Decision Processes* 64:325–39.
- Jiang, Y., and Punj, G. 2008. "The Influence of the Online Decision Environment Characteristics on Consumer Selective Information Processing and Choice." *Advances in Consumer Research* 35:741–42.
- Kent, J., and Parker, S. 1999. "International Containership Carrier Selection Criteria." *International Journal of Physical Distribution and Logistics Management* 29(6):398–408.
- Kirchoff, J.F., Omar, A., and 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.
- Knemeyer, A.M., and Naylor, R.W. 2011. "Using Behavioral Experiments to Expand Our Horizons and Deepen Our Understanding of Logistics and Supply Chain Decision Making." *Journal of Business Logistics* 32(4):296–302.

- Kunsch, P., Kavathatzopoulos, I., and Rauschmayer, F. 2009. "Modelling Complex Ethical Decision Problems With Operations Research." *Omega* 37(6):1100–108.
- Liljestrand, K., Christopher, M., and Anderson, D. 2015. "Using a Transport Portfolio Framework to Reduce Carbon Footprint." *International Journal of Logistics Management* 26(2):296–312.
- Luce, M.L., Bettman, J.R., and Payne, J.W. 2000. "Attribute Identities Matter: Subjective Perceptions of Attribute Characteristics." *Marketing Letters* 11(2):103–16.
- Markman, G.D., and Krause, D. 2016. "Theory Building Surrounding Sustainable Supply Chain Management: Assessing What We Know, Exploring Where to Go." *Journal of Supply Chain Management* 52(2):3–10.
- Marks, H. 2015. "How a Greener Trucking Industry Could Save \$40 Billion Per Year." March 26. *Green Biz*. <https://www.greenbiz.com/article/how-trucking-industry-could-reduce-ghg-emissions>
- Marti, E., and Gond, J.-P. 2017. When Do Theories Become Self-Fulfilling? Exploring the Boundary Conditions of Performativity. *Academy of Management Review*. <https://doi.org/10.5465/amr.2016.0071>
- Matthews, L., Power, D., Touboulis, A., and Marques, L. 2016. "Building Bridges: Toward Alternative Theory of Sustainable Supply Chain Management." *Journal of Supply Chain Management* 52(1):82–94.
- McGinnis, M.A. 1990. "The Relative Importance of Cost and Service in Freight Transportation Choice: Before and After Deregulation." *Transportation Journal* 30(1):12–19.
- Meixell, M.J., and Norbis, M. 2008. "A Review of the Transportation Mode Choice and Carrier Selection Literature." *International Journal of Logistics Management* 19(2):183–211.
- Montabon, F., Pagell, M., and Wu, Z. 2016. "Making Sustainability Sustainable." *Journal of Supply Chain Management* 52(2):11–27.
- Montgomery, H. 1983. "Decision Rules and the Search for a Dominance Structure: Towards a Process Model of Decision Making." In *Analysing and Aiding Decision Processes*, edited by P.C. Humphreys, O. Svenson, A. Vari, 343–69. Amsterdam/Budapest: North-Holland and Hungarian Academic Press.
- Morton, A., and Fasolo, B. 2009. "Behavioural Decision Theory for Multi-Criteria Decision Analysis: A Guided Tour." *Journal of the Operational Research Society* 60(2):268–75.
- Nunnally, J.C., and Bernstein, I.H. 1994. *Psychometric Theory*. New York, NY: McGraw-Hill.
- Oge, M.T. 2016. "Cleaning Up Big Trucks to Deliver a Cleaner Future." *Huffpost*. http://www.huffingtonpost.com/margo-toge/cleaning-up-big-trucks-to-deliver-a-cleaner-future_b_7632974.html
- Pagell, M., and Shevchenko, A. 2014. "Why Research in Sustainable Supply Chain Management Should Have No Future." *Journal of Supply Chain Management* 50(1):44–55.
- Payne, J.W., Bettman, J.R., and Schkade, D.A. 1999. "Measuring Constructed Preferences: Towards a Building Code." *Journal of Risk & Uncertainty* 19(1–3):243–70.
- Perdue, B.C., and Summers, J. 1986. "Checking the Success of Manipulations in Marketing Experiments." *Journal of Marketing Research* 23(4):317–26.
- Prockl, G., Teller, C., Kotzab, H., and Angell, R. 2017. "Antecedents of Truck Drivers' Job Satisfaction and Retention Proneness." *Journal of Business Logistics* 38(3):184–96.
- Reuter, C., Goebel, P., and Foerstl, K. 2012. "The Impact of Stakeholder Orientation on Sustainability and Cost Prevalence in Supplier Selection Decisions." *Journal of Purchasing & Supply Management* 18(4):270–81.
- Roe, R.M., Busemeyer, J.R., and Townsend, J.T. 2001. "Multialternative Decision Field Theory: A Dynamic Connectionist Model of Decision Making." *Psychological Review* 108(2):370–92.
- Schuman, H., and Presser, S. 1981. *Questions and Answers in Attitude Surveys: Experiments on Question Form, Wording, and Context*. New York, NY: Academic Press.
- Seuring, S., and Müller, M. 2008. "From a Literature Review to a Conceptual Framework for Sustainable Supply Chain Management." *Journal of Cleaner Production* 16(15):1699–710.
- Shafir, E., Simonson, I., and Tversky, A. 1993. "Reason-Based Choice." *Cognition* 49(1–2):11–36.
- Simon, H.A. 1955. "A Behavioral Model of Rational Choice." *The Quarterly Journal of Economics* 69(1):99–118.
- Slovic, P. 1995. "The Construction of Preference." *American Psychologist* 50(5):364–71.
- Tate, W.L., Ellram, L.M., and Kirchoff, J.F. 2010. "Corporate Social Responsibility Reports: A Thematic Analysis Related to Supply Chain Management." *Journal of Supply Chain Management* 46(1):19–44.
- Thomas, R.W. 2011. "When Student Samples Make Sense in Logistics Research." *Journal of Business Logistics* 32(3):287–90.
- Thomas, R.W., Davis-Sramek, B., Esper, T., and Murfield, M. 2014. "Attribution Effects Of Time Pressure in Retail Supply Chain Relationships: Moving From 'What' To 'Why.'" *Journal of Business Logistics* 35(3):225–40.
- Thomas, R.W., Esper, T.L., and Stank, T.P. 2010. "Testing the Negative Effects of Time Pressure in Retail Supply Chain Relationships." *Journal of Retailing* 86(4):368–82.
- Thomas, R.W., Fugate, B.S., Robinson, J.L., and Tascioglu, M. 2016. "The Impact of Environmental and Social Sustainability Practices on Sourcing Behavior." *International Journal of Physical Distribution and Logistics Management* 46(5):469–91.
- Thornton, L., Autry, C., Gligor, D., and Brik, A. 2013. "Does Socially Responsible Supplier Selection Pay Off for Customer Firms? A Cross-Cultural Comparison." *Journal of Supply Chain Management* 49(3):66–89.
- Tokar, T. 2010. "Behavioral Research in Logistics and Supply Chain Management." *International Journal of Logistics Management* 21(1):89–103.
- Van der Byl, C.A., and Slawinski, N. 2015. "Embracing Tensions in Corporate Sustainability: A Review of Research From Win-Wins and Trade-Offs to Paradoxes and Beyond." *Organization & Environment* 28(1):54–79.
- Williams, Z., Garver, M.S., and Taylor, G.S. 2013. "Carrier Selection: Understanding the Needs of Less-Than-Truckload Shippers." *Transportation Journal* 52(2):151–82.

- World Commission on Environment and Development. 1987. *Our Common Future*. Oxford, UK. http://mom.gov.af/Content/files/Brundtland_Report.pdf.
- Wu, Z., and Pagell, M. 2011. "Balancing Priorities: Decision Making in Sustainable Supply Chain Management." *Journal of Operations Management* 29(6):577–90.

SHORT BIOGRAPHIES

Beth Davis-Sramek (PhD University of Tennessee) is the Gayle Parks Forehand Associate Professor of Supply Chain Management at Auburn University. She holds a doctorate from the University of Tennessee. Currently, she serves as an Associate Editor of the *Journal of Business Logistics* and the *Journal of Supply Chain Management*. Her research centers on strategic supply chain management decision making, with an emphasis on sustainability.

Rodney W. Thomas (PhD University of Tennessee) is an Associate Professor of Supply Chain Management at the University of Arkansas. He serves as Associate Editor for the *Journal of Supply Chain Management*, as Senior Associate Editor for the *International Journal of Physical Distribution and Logistics Management*, and as an Editorial Review Board Member for the *Journal of Business Logistics*. His research interests focus on behavioral aspects of supply chain management.

Brian S. Fugate (PhD University of Tennessee) holds the Oren Harris Endowed Chair in Transportation and is the Chair of the Supply Chain Management Department at the Sam M. Walton College of Business at the University of Arkansas, a MIT Fulbright Senior Research Scholar, and Co-Editor-in-Chief of the *Journal of Supply Chain Management*. His research has appeared in several journals including *Journal of Business Logistics*, *Academy of Management Journal*, *Decision Sciences*, *Journal of Operations Management*, and *Journal of Supply Chain Management*.