

## **Environmental Innovation and Customer Value**

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### **Abstract**

As firms face economic change and increasing customer demand for environmentally friendly products, innovation and the ability to change have become critical tools in their competitive arsenals. Yet little is known about how environmental innovation in the business-to-business context is valued. The authors present findings from a means-end analysis of perceived value of logistics service providers through customers' perceptions of value attributes, consequences, and outcomes. The majority of the interviewed business customers want their logistics service providers to be proactively innovative. Cost-centric and environmentally-centric managers value environmental innovation differently. This article contributes to the environmental and innovation logistics literature and offers implications for logistics service providers considering how they can do more for their customers in an environment of less.

Keywords: environmental logistics, innovation, customer value, qualitative research

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## Introduction

Economic turbulence and uncertainty in recent years has driven the need *to innovate*, to change and conduct business differently in the new era. Uncertainty in the natural environment has driven the interest in business sustainability. As companies consider how they can change the status quo, the question resounds, “How can we do more to create a sustainable business in an environment of less?” Receptivity to change creates an *environment of innovation* (Azadegan and Dooley, 2010). In this new era, *innovation* is the driving force behind companies that can rise up to face challenges and change to meet the heightened demands of customers in a world of both economic and environmental uncertainty.

Consumer demand for more environmentally responsible firms is increasingly being felt further up the supply chain (Ehrenfeld, 2005; Plambeck, 2007). Improved environmental performance requires innovative green solutions on the part of both manufacturers and their logistics service providers. Research suggests that business customers value environmental products and services (Handfield et al., 1997), but little empirical evidence exists to substantiate how environmental attributes are perceived and translated into customer value in the business to business (B2B) context.

Understanding the perceived value of environmental attributes is particularly important in the B2B context of logistics service providers (LSP) and their customers. The purpose of this research, therefore, is to explore the role environmental innovation plays in the customer value equation. This is done from the perspective of managers buying 3<sup>rd</sup> party logistic services. A means-end approach (Gutman, 1982) is employed to assess attributes, consequences and goals of LSP customers, with special emphasis on the environmental aspects important to them.

## Literature Review

Environmental logistics services represent a relatively new and under-explored research stream. The majority of logistics literature on environmental services falls within the context of ‘greening the supply chain’ (Abukhader and Jonson, 2004). Whether termed as environmentally responsible logistics (Goldsby and Stank, 2000) or logistics corporate social responsibility (Carter and Jennings, 2002; Ciliberti et al., 2007), environmental logistics has been tied to firm financial performance (Carter and Jennings, 2002). Because logistics includes many of the environmentally impactful activities in product distribution, including warehousing, transportation and packaging of products, it plays a key role in corporate environmental policies (Murphy et al., 1995; Murphy and Poist, 2003).

Similar to the lack of focus on environmental services, service innovation is also an area that has been neglected. Research has been conducted on product innovation, however research on service innovation and specifically logistics innovation remains sparse (Flint et al., 2005). Flint et al. (2005) propose that being innovative in the logistics service context is a social process requiring an element of customer awareness, clarification and reflecting activities, and inter-organizational learning, to arrive at logistics innovations consistently. An innovating capability as a firm resource enables service providers to maintain an ongoing relationship with customers through the dynamic improvement of services that manifest superior value to

customers (Stalk et al., 1992). Thus, innovation is considered a key to competitive advantage in the marketplace (Higgins, 1995). The development of innovative environmental logistics services that keep pace with customers' dynamic desires demands a market-focused and innovation-focused orientation able to sense and adapt to change.

Market orientation with the intent of consistently meeting customer desired value is a driving force of competitive advantage (Slater and Narver, 1994). Customer value is a concept that has evolved from understanding customers' perceived value of a service to include the concept of co-creating value with customers. Co-creation of value as addressed in service dominant logic provides a rich understanding of *operant resources* (an economic term for intangible or use implied attributes of a product or service) (Vargo and Lusch, 2004), and customers' perceptions of value-in-use that extends beyond simple transactions to deeper involvement between service providers and customers from innovative ideation through to on-going service operations. The dynamic nature of what customers value demands a capability for sensing change and connecting with customers early and deeply (Flint, 2006; Flint and Mentzer, 2006; Flint et al., 2002b; Woodruff, 1997), be it for technical, environmental, or relational innovation. Yet, the dearth of insight to business customers' perceptions of the innovativeness and environmental focus of logistics service providers specifically reveals a need for further investigation.

## **Methodology**

A qualitative means-end approach was adopted to understand how environmental attributes were valued by logistics service customers. Means-end analysis explores how attributes of services/products are associated with benefit and sacrifice consequences and higher-order end-states or goals (Gutman, 1982; Woodruff and Gardial, 1996). Data were collected from 23 senior level logistics managers considered to be key decision makers at Fortune 500 consumer or industrial products. Depth interviews (averaging 45 – 75 minutes in length) were conducted with the participants (McCracken, 1988), who were asked to talk about their firm's top logistics service provider. Interviews were partially structured, utilizing a laddering technique to inspire conversation rather than a question-and-answer format (Gutman, 1982; Woodruff and Gardial, 1996). All interviews were recorded and transcribed verbatim. Transcripts were coded and questions were added for subsequent interviews based on interpretation of responses, in a true inductive emergent design (Glaser and Strauss, 1967; Strauss and Corbin, 1998). Upon reaching apparent saturation through the laddering technique (Charmaz, 2006), grand tour interview techniques were adopted in subsequent interviews to uncover greater depth as participants discussed their logistics provider experiences (Spradley, 1979). Finally, all codes were sorted based on context analysis using QDA Miner until attribute/consequence themes emerged (Glaser, 1998; Weitzman, 2000). The attributes, consequences, and end-goals were then mapped to value hierarchies.

## **Findings**

Interpretation of insights shared by participants resulted in three consistent themes concerning what these customers valued from their logistics service providers: the importance of long-term relationships, innovation (environmentally- and efficiency-based), and service quality. These themes were highlighted throughout interviews as managers discussed what set their top logistics service providers apart from competitors. The attributes had direct ties to firm success, customer satisfaction, and profitability (Figure 1). Creating a long-term beneficial

relationship was a crucial element in how participants viewed the success of their logistics service provider partnerships. Because service quality attributes and consequences have been well-addressed in the literature, (Flint et al., 2002a; Mentzer et al., 2001), we focus on the relationship and innovation themes. Relationship attributes like trust, commitment, and personal interaction were associated with ease of doing business and long-term relationships, which were conceptually linked to sustainable competitive advantage. Innovation emerged as a key theme with two different connotations: environmental and efficiency innovation, depending on the orientation of the manager. When interpreting the data, managers seemed to fall into one of two orientations i.e., cost-centric or environmentally-centric, irrespective of role or industry sector. When discussing attributes they valued, cost-centric managers tended to focus their attention on efficiency innovation, expecting to achieve efficiency and increased revenue end goals. Whereas, environmentally-centric managers tended to emphasize environmental innovation attributes, with expectations of increased profitability end states.

**Figure 1: Value Hierarchy Results**

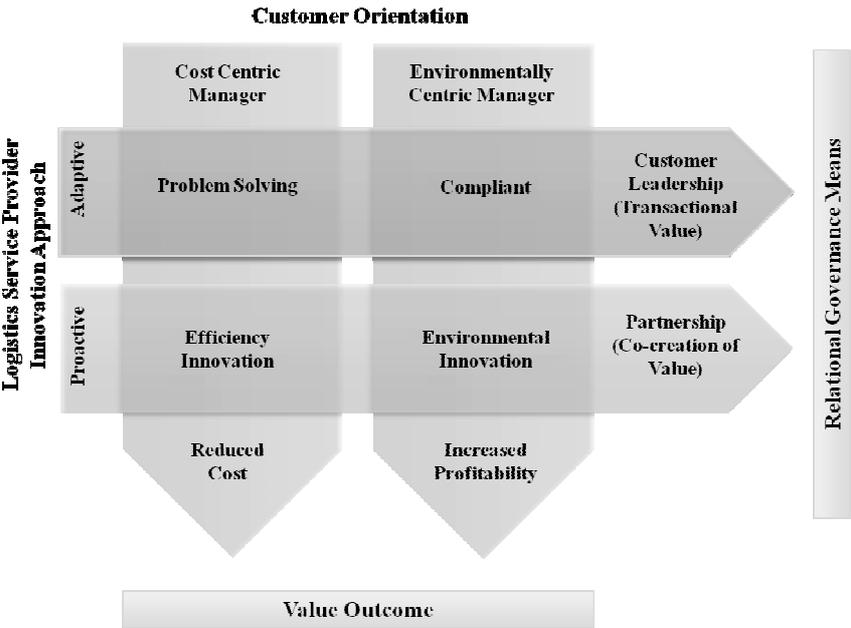


The value and importance of environmental innovation became apparent as managers discussed the attributes they value in their top logistics service providers. Environmentally-centric managers felt they gained efficiencies through environmental solutions. On the other hand, cost-centric managers focus on efficiency-based innovations, but not on capitalizing on the environmental benefits that often result. Environmentally-centric managers discussed innovation in environmental terms and their consequential cost saving efficiencies and environmental benefits. Environmental innovation meant that their logistics service providers were scanning the horizon and creatively providing solutions for the future. Corporate goals for many environmentally-centric managers are closely tied to the benefits of their environmental image and sustainable profitability. Environmental sustainability initiatives were an indicator of market orientation and market scanning on the part of their LSPs. In contrast, innovation for cost-centric managers was the impetus for cost savings that enabled lower prices for customers, creating industry opportunities that ultimately generate revenue.

They discussed the proactive nature of their carrier’s innovation in terms of the LSPs coming to them with innovative equipment solutions and system solutions.

The links between the relationship and innovation themes were very apparent throughout the interviews. Deeper insight occurred when the orientation of the interviewed managers was coupled with their perceptions of their LSPs as either proactive or adaptive in responding to the managers’ needs (Figure 2). When the customer and the LSP collaborated and worked together on innovative solutions, managers reported enhanced relationships that encouraged LSPs to continuously develop innovative solutions. Managers spoke of their proactive LSPs in partnership terms, in which they jointly co-created value. Both cost-centric managers and environmentally-centric managers valued the proactive innovation of their top LSPs, but recognized that the majority of their LSPs were adaptive. With adaptive LSPs, customers often mandated change initiatives; requirements became transactional and were represented in the contracts and request for bids. Cost-centric managers stipulated problem-solving requirements of their LSPs, whereas environmental managers looked for environmental compliance from their LSPs. Whether environmental or cost-centric, both types of manager seek proactively innovative LSPs in supplier selection decisions.

**Figure 2: A Contextualized Model of Environmental Innovation**



Comparing proactive versus adaptive LSPs, adaptive LSPs had to be warned of change while proactive LSPs didn’t wait to be asked to change. They were always bringing new ideas to their customers. Cost-centric and environmentally-centric managers were looking for proactively innovative LSPs that were willing to work with them on making changes to their way of conducting business. When LSPs did not innovate and bring ideas to the table, the customers discussed encouraging their service providers to change.

**Implications and Future Research**

Several limitations of this study should be noted. First, consistent with research of this nature, our data are primarily participant interviews as opposed to observation and documents

sometime used in grounded theory (Flint et al, 2002). Second, we relied on interviews with a small sample of participants (23) in the industrial and consumer products industries. Despite these limitations, there are many implications regarding how LSP customers value the partnerships that drive proactive efficiency and environmental innovation. The contextualized model of environmental innovation further highlights the importance of both efficiency and environmental innovation for LSP customers. While cost-centric managers seek reduced cost from efficiency innovation to survive, environmentally-centric managers seek environmental innovations to increase profitability and establish leadership in their industries. Efficiency innovation seems to be standard in the industry for an LSP with high levels of service quality; logistics service quality excellence is often a result of innovation (Flint et al., 2005). Environmental innovation, on the other hand, resonated deeply with the end-states and goals managers have for themselves and for their companies.

The efficiency and environmental innovation findings have both theoretical and managerial implications, and provide fodder for future research. First, the importance of collaborative partnerships is evident. Innovation, as defined by participants, takes place when there is an LSP/customer collaborative partnership that focuses on the co-creation of value. Proactive LSPs in collaborative partnerships suggest innovative ideas to their customers, whereas transactional relationships require more input and direction from the customers. Second, proactive innovation is a key factor in LSPs meeting their customers' desired-value. Customers want to partner with LSPs that are proactive and innovative. Customers believe that these innovations help them reach their goals in areas that may not be core competencies within their own firms. Proactive environmental innovation can differentiate an LSP from other service providers, as they co-create increased profitability, efficiency, and goal attainment of customers' corporate and individual goals. Therefore, LSPs wanting to develop stronger relationships with key customers should consider proactive initiatives and innovative solutions that can benefit their customers.

With respect to theoretical implications, this research begins to address the call for further exploration of the nature of the relationships between environmental action, supply chain strategy, and logistics operations (Goldsby and Stank, 2000). The qualitative analysis suggests that environmental action on the part of LSPs creates beneficial advantages for their customers through increased profitability and goal attainment. This research also demonstrates a relationship between innovation and environmental initiatives, suggesting a dual benefit to innovative environmental initiatives of cost saving efficiency and environmental sustainability. Future research exploring the link between innovation and environmental initiatives can build on the rich theoretical base of innovation research.

As marketing, operations, and logistics researchers shift their focus from product oriented value to service value (Goldstein et al., 2002; Parasuraman et al., 1985), this research lays the foundation for further exploration of the impact of environmental innovation in the service sector. While this research set out with the goal of understanding the meaning and consequences of environmental innovation, it also uncovered the value of efficiency innovation to cost-centric managers. Interestingly, cost-centric managers recognized that while they are not focused on environmental innovations at this time, in the future they expect to be looking to their LSPs to lead the way, as environmental responsibility becomes a standard business practice. Future research could also explore the longitudinal effects of environmentally innovative LSPs on cost-centric customers' value expectations. A further limitation of this research is that the underlying rationale of the participant was not addressed, but warrants future research to see what role corporate culture, leadership, and influence play.

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