THE INFLUENCE OF PERCEIVED RISK ON CORPORATE REPUTATION IN THE
B2B MARKET

By
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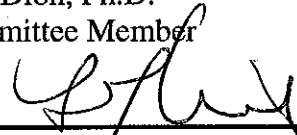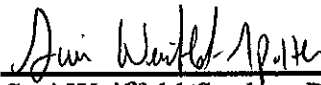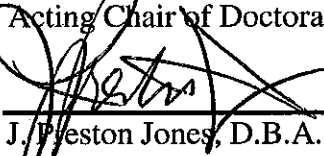IN THE B2B MARKET

By

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We hereby certify that this Dissertation submitted by Angela Poulakidas conforms to acceptable standards, and as such is fully adequate in scope and quality. It is therefore approved as the fulfillment of the Dissertation requirements for the Degree of Doctor of Business Administration.

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ABSTRACT

THE INFLUENCE OF PERCEIVED RISK ON CORPORATE REPUTATION IN THE
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This research examined how perceived risk moderated the effect of a corporation's reputation for quality and corporate social responsibility, two attributes whose meanings have been the subject of ongoing interest in the current business-to-business literature. Relationships among the levels of perceived risk (high/low) and strength of CR argument for quality and CSR are hypothesized, and integrated into a Research Model. In order to test and validate the model, the data was collected from a total of 102 commercial and municipal fleet vehicle managers who provided evaluations of biodiesel suppliers with respect to their reputation for quality and corporate social responsibility. The fleet vehicle manager's evaluations (n=102) of biodiesel suppliers were analyzed and empirically tested using structural equation modeling. On a practical level, this research develops insights related to the utilization of CR-attributes in high and low perceived risk contexts. On a theoretical level, previous research (Dowling & Staelin, 1994; Balmer & Greyser, 2006) was extended to demonstrate that industrial buyers also respond to higher levels of perceived risk by relying on different types of available information related to corporate reputation. This study will report on the results of experiments that manipulated the level of perceived risk, one for each attribute (i.e. quality and CSR), in a novel and technically complex purchase decision.

To my mother Mary Poulakidas.

ACKNOWLEDGEMENTS

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CHAPTER I

INTRODUCTION

<u>**Overview**</u>

This chapter presents the main ideas covered in this thesis document. It includes an overview of the motivation for this research, the research questions, conceptual and methodological issues associated with perceived risk and corporate reputation, and its potential contributions are discussed. It concludes with a description of the main concerns for subsequent chapters.

<u>**A Definition of Perceived Risk**</u>

As we live in a global economic and political environment of constant and often unexpected change, industrial buyers and indeed all of us must deal with a highly uncertain decision environment (Borghini, Golfetto and Rinallo, 2006). Meeting the diverse challenges of the changing and uncertain environment has given rise to a significant academic literature both to describe it and to propose methodologies for effectively dealing with it (Martin and Gaudenzi, 2009). A paramount topic of this academic area has been the treatment of risk, which this research focuses on in terms of industrial buying behavior. The choice of the latter reflects its key importance and frequency which makes it especially appropriate for research linked to improving business management.

<u>**Research Objectives**</u>

The primary objective of this research is to address the extent to which the level of perceived risk is a crucial factor in industrial behavior, including its effects on information acquisition and use related to the CR attributes of quality and CSR. The Dowling and Staelin Process Model for Perceived Risk and Information Search (1994) is the cornerstone of this study. The basic premise of the Process Model for Perceived Risk and Information Search is that buyers respond to higher levels of perceived risk by relying on different types of available information. In order to capture the nature of perceived risk and its relationship to risk-handling behavior, which has been explored by a number of researchers, this model was extended to demonstrate that industrial buyers also respond to higher levels of perceived risk by relying on different types of available information related to corporate reputation (CR). Specifically, the research objectives were as follows:

1) To identify the extent to which the industrial buyer relies on information related to the CR attributes of quality and corporate social responsibility (CSR) to reduce perceived risk.

2) To identify the extent to which industrial buyers will find certain dimensions of CR more influential for their industrial product evaluations than other dimensions in high- as opposed to low-perceived risk conditions.

3) As prior experimental research has shown, CSR perception is not typically considered diagnostic for evaluations of functional attributes (Sen and Bhattacharya, 2001). This study addressed the question of to what extent does the CSR dimension significantly influence industrial product evaluations in either high or low perceived risk situations.

Significance of Perceived Risk's Impact on Corporate Reputation

Buyers experience perceived risk when they go into a buying situation because there is a certain degree of uncertainty about the future performance of a product (Cox, 1967). In

order to provide assurance against the possibility that the product will not work out as expected, buyers use different types and sources of information (e.g. Bansal and Voyer, 2000; Dowling and Staelin, 1994; Erdem and Swait, 2000; Murray, 1991). Corporate reputation is a source of information that can be used to reduce a buyer's risk-perception. While it has been observed that a buyer is more likely to choose a company which has a credible, trustworthy, reliable and/or ethical reputation (Fombrun and Shanley, 1990; Sobel, 1985; Weigelt and Camerer, 1988), as opposed to dishonest, unethical and poor performing, the explicit link between specific dimensions of corporate reputation and perceived risk has not been established (Fombrun, 1996). It is proposed in this research that dimensions of a company's reputation, such as its reputation for quality and CSR, is used by a purchasing manager to impact or not impact the magnitude of their perceived risk.

To clarify the influence of corporate reputation, this dissertation investigates situations in which B2B buyers did not have an immediate understanding of all the characteristics of their product. This paper extended this line of research into B2B buyer behavior by focusing on buying decisions related to bio-diesel, a new product category in which there is a substantial market category need to understand so that governments and businesses have a cheaper, more environmentally-friendly fuel source. In selecting a biodiesel supplier there is risk because purchasing managers must make a decision which optimizes the allocation of funds allocated in a budget (Shenson and Nicholas, 1997) which will also meet the approval of their co-workers and other professionals (Connor and Davidson, 1997).

Researchers have heretofore not focused on the extent to which the corporate reputation attributes of quality and CSR impact perceived risk, in the context of B2B markets. Moreover, while the constructs of information processing, perceived risk and corporate

reputation have been studied extensively, especially in the consumer behavior literature, this is not the case for B2B markets.

This study investigated how corporate reputation and perceived risk influence buyers' evaluation of bio-diesel, thereby improving our understanding of the purchasing process of biodiesel as an energy source. More specifically, the objective of this research is to see how purchasing managers use CR-information to handle buying a relatively new product. In particular, this research investigated the influence of risk on corporate reputation attributes of quality and CSR. Past examination of corporate reputation and perceived risk theory has not considered decision-making and the role of corporate reputation attributes. While complementary in its scope and nature to the aforementioned literature in risk, the current study seeks to advance the current understanding in those aspects.

In this regard, this dissertation presents the first known systematic study of the influence of perceived risk on corporate reputation in a B2B context. Due to the newness of this area, no specific theoretical framework exists. The theory of industrial buyer behavior as well as Dowling and Staelin's Process Model of Information Search and Decision Making (1994), however, can provide some guidance. Key research contributions are reviewed in order to make this connection. The next chapter develops the research model and its hypotheses, based on the discussed past research, as well as based on insight obtained through interviews with B2B purchasing managers.

As this dissertation constitutes an exploratory study of the interrelationship between perceived risk, corporate reputation and buyer intent, several constructs and their influences on each other were investigated within this context. Relevant concepts playing an important role in perceived risk for B2B procurement of biodiesel were identified through a systematic

and structured process of interviewing municipal and commercial purchasing managers and factor analysis. This research is also timely because it is consistent with the contemporary view of marketing as basically information-management (Holland and Naude, 2004).

To understand the theoretical and empirical bases of perceived risks' affects on information acquisition and use in industrial purchasing behavior, it is necessary to know how different types of information influence the purchasing situation (e.g. Arkes & Hammond, 1986; Hogarth, 1987; Kahneman, Slovic, & Tversky, 1982). It is evident that corporate reputation can serve as a source of information to reduce risk as it has the ability to convey information about a healthy reputation and can act as a risk suppressor (Ewing, Caruana, and Loy, 1999).

Growing use of corporate reputation in B2B markets indicates the importance of handling and processing information which is applied to decision-making under uncertainty. Already, many different types of CR-related attribute information are referred to such as a company's reputation for being efficient (Hebsen 1989), reliable (Han and Leong, 1996) and trustworthy (Ewing et. al., 1999). A firm with a good corporate reputation is more likely to stand out in the marketplace, attracting both prospective and repeat customers (Connor and Davidson, 1997, Ewing *et. al*., 1999). The more respected a company's reputation, the more likely the purchasing public will assume that the products produced and the services tendered by that company are better, of higher quality and worth more in actual price (Dowling, 1994). Similarly, the more respected a firm's reputation, the more likely negative publicity will be edited or filtered out of the customer's consciousness (Howard, 1998), which reduces the risk aversion of doing business with a given company (Connor and Davidson, 1997; Dollinger,

Golden and Saxto, 1997; Hebsen, 1989) and serves as an important catalyst for attracting prospective clients to start a future relationship with the firm

(Hayes, 1992; Howard, 1998). A respected reputation enhances the well-being of any firm by assuaging their fear of working with a given company across all of the stakeholders (Connor and Davidson, 1997; Shenson and Nicholas, 1997). These multiple attributes are intended to improve task outcomes in an organization's business environment.

Information search activity for purchases across a variety of industrial products using the CR-attributes for quality and CSR has not been specifically addressed. In addition, aspects of corporate reputation are not clearly delineated and have a general category of 'information search' or 'corporate reputation.' This paper argues, from the standpoint of effective marketing strategy and corporate reputation management, that specific attributes should be delineated, to see which do and do not have an impact in the presence of perceived risk. Moreover, there are specific types of corporate reputation attributes that can be used and crafted to help provide an advantage over those of industry rivals (Dowling, 2006). In this study, we argued that the corporate reputation attributes of quality and corporate social responsibility will act as a useful extrinsic cue about the quality of the firm and its products and will thus reduce industrial buyer's perceived risk.

As risk is an underlying condition of all purchasing decisions, we can observe how different types of CR-attributes may or may not mitigate high or low levels of risk. Past research studies have neglected to assess the impact that corporate reputation which directly affects the decisions related to the evaluation of bio-diesel.

Research Process

This study creatively combines existing literatures in industrial buying (Robinson, Faris and Wind, 1976; Sheth, 1973; Webster and Wind, 1972), information processing, perceived risk (Daft and Lengel, 1984; Dowling and Staelin, 1984) and corporate reputation (Balmer, 2006) to generate a research model. From the industrial buying literature we were able to see that although each of the buyer models has a different number of phases describing the industrial buying process, they all show that the underlying goal of purchasing is to have the least possible risk. From the information processing and perceived risk literature, it is theorized that mangers should use information to reduce risk and uncertainty. In the corporate reputation literature, it has been demonstrated how important a good corporate reputation is in mitigating the impact of negative events and risk-perception. Although this research has identified perceived risks' impact on buyer behavior, much work still needs to be done to fully understand the dynamics of the purchasing scenario as it is impacted by perceived risk in a B2B context (Sheth, 1996). The research model and hypothesis of this study, which are developed in the next chapter, are grounded to a large extent on these findings.

Due to the relative newness of using biodiesel in municipalities and in the business-to-business environment, a series of interviews with municipality professionals were conducted as a pre-study and first major step for this dissertation. The goal of these efforts was to provide an assessment of the relevant attributes and properties of purchasing bio-diesel. This step also helped in the identification of environmental and situational constructs that may influence purchasing in high versus low risk conditions. The elements were then integrated into the Research Model.

The second major step in this process was the testing of the proposed Research Model with data gathered from a large-scale survey. As such, measures for each construct were

developed based on the insights generated from the interviews and past research studies. These measures were refined via a systematic process, and final survey instruments will be constructed. The survey was administered to purchasing professionals of bio-diesel, who were drawn in a random fashion from the membership/subscriber databases of trade associations and magazines.

Justification and Rationale

The rationale for studying how the specific CR attributes of quality and CSR impact risk is to explore an important but relatively unstudied area of marketing. The results of this study that define conditions in which certain dimensions of corporate reputation flow through to produce public relations and corporate reputation enhancing activities are important. Although the conceptualization and tests of the influencing role of perceived risk may be readily observed, and has been suggested (e.g. Biehal and Sheinin, 1990) in previous studies, it has not been methodically applied to elements of corporate reputation and the conditions in which they occur have not received adequate research attention. The findings of this study will help advance the knowledge of the conditions that influence the impact of elements of corporate reputation in the evaluations of industrial products and services marketed by a corporation in the business-to-business service arena. There is a need for a better understanding of the conditions in which such impact occurs, and this research is a valuable step in that direction.

This study also complements other researchers' efforts to understand how perceived risk can be handled and managed in a B2B buying context, and how corporate reputation can be used to help handle that risk. Understanding the relationship between risk and corporate reputation may explain many conflicting results in previous research studies on corporate

reputation and risk from the corporate reputation perspective. It should be noted, for example, that empirical results from past studies have not always supported the link between perceived risk and information search. Geumnden (1985) for instance examined the link between perceived risk and information search using a meta-analysis of 100 papers and found 51 contradictory results that reported no increase in information search. The results of his study, however do not necessarily suggest the absence of a relationship between the two. Many of the decision situations examined in previous studies involved, by nature, low levels of risk such as products that were purchased routinely, were financially trivial or had low involvement. Thus, there was little incentive to employ a risk-reducing strategy of any form. For decision contexts involving relatively high levels of risk such as the adoption of new technology products, the argument that a higher perceived risk leads to more information search is likely to hold true.

This study is a significant contribution to understanding how potent it is especially in situations that have probability of failure and how it can be used in a number of different contexts. In this climate where the country and cities are trying to convert to biodiesel and renewable energy, and where there are many new biodiesel suppliers emerging it is a unique and special environment from which to view how to enter these markets with the least amount of uncertainty as possible. Branching into the details of exactly how CR-information is used to manage risk will contribute to and be a building block from which to create a foundation from which marketing practitioners can build. It also contributes to the theoretical models that researchers are trying to test in a rigorous fashion.

The results of this study will be an important first step toward enabling suppliers of industrial products to better understand their customers' purchase decision processes with

regard to the types of information sought during a purchasing decision. Overall, our results will help managers in the B2B markets understand how the corporate reputation attributes for quality and CSR can affect their customer's perceptions of risks involved in dealing with them. In addition, the results of the study demonstrated how the relative impact of quality and CSR increases or stays the same when making purchasing decisions in riskier buying situations. With this knowledge, managers can design appropriate messages that can either build on positive aspects of their corporate reputation or address concerns that are related to these aspects of their business model. These messages can be further shaped to place greater or lesser emphasis on the CR-attributes of quality and CSR relative to other types of information that is available about the company. In light of ongoing research concerns in marketing, the findings in this research are a significant contribution to the literature because it provides for combined perspectives of the marketing, perceived risk and the information processing disciplines.

<u>The Rationale for Studying Buyer Procurement of Biodiesel</u>

As a result of volatile fuel prices, increased depletion of fossil fuels and dependence on politically unstable countries for such fuel, as well as mandates to reduce the CO_2 emissions from fossil fuels (e.e. Kyoto protocol) and other environmental issues, more attention is being paid to the development and marketing of bio-fuels. Additionally, green purchasing practices are now a major factor in consumer and B2B purchasing behavior (Roberts & Bacon, 1997; Rowlands, Parker, & Scott, 2002; Schulte & Vorst., 2004; Shrum, Mccarty, and Lowrey, 1995). This has led to the emergence of a green market segment (Beger and Corin, 1992; Diamantopoulos et. al., 2003; Roberts, 1996; Rowlands et. al., 2002,

Schlegelmilch et. al., 1996). A specific case is the adoption of bio-renewable energy by municipalities in the United Sates, and in particular a bio-fuel such as bio-diesel.

Key driving factors for the adoption of new technology such as biodiesel include the need for having a marketable green image (Wong, Turner, and Stoneman, 1996). Public opinion in the mass market is also spurring suppliers and municipalities to invest in green technologies such as bio-diesel (Schulte, Hart, and Vorst, 2004). As the demand for buying green products increases, research is needed to understand the factors which influence the adoption of green technologies and products (Liesbeth, Verbeke, Popp, Buysse, & Huylenbroeck, 2009; Sperling *et. al*., 2004).

<u>Contribution/Value-Added of this Research</u>

As shown above, empirical research demonstrates that perceived risk and the choice of risk reducing strategies impacts organizational buying decisions (Bunn and Liu, 1996; Peters and Venkatesan, 1973). Many studies have examined the role of perceived risk in purchasing, but the majority of this research focuses on the buying of products using a consumer rather than industrial buyer perspective. Few studies have examined perceived risk in an industrial buyer context or how corporate reputation information is used to handle risk-perception. This thesis studied buyer's perceived situational risk in an organizational buying context using dimensions of corporate reputation.

Extensive literature has established a correlation between corporate reputation and the ability of a company to develop a reputation which would enable it to offset any negative impact resulting from such events (Beck, 2009; Dowling, 2004). For example, if a company is perceived as a market leader or innovator, these are positive attributes which may buffer any adverse impact to their reputation (eg. GE, Imagination Works Campaign in response to

dumping complex plastic chemicals into the Hudson). To mitigate the negative public relations effect of acting against public policy such as dumping pollutants into a major river (i.e.. Hudson river), GE launched an 'Imagination Works' campaign which conveys the environmentally responsive processes of the company. The reputation risk literature has extensively identified companies which take actions to strengthen their reputation in a way that would mitigate the impact of past negative events, as well as to insulate itself from the full impact of potential future negative revelations (Dowling, 2006). While these corporate reputation building initiatives have been observed on the macro level, the explicit link between the CR attributes of quality and CSR and their impact on perceived risk and the buyers efforts to reduce purchasing risk in the B2B market has not been the subject of existing research. This thesis explores more deeply the link between corporate reputation and risk.

The results of this study that define conditions in which certain dimensions of corporate reputation flow through to produce public relations and corporate reputation enhancing activities are important. Although the conceptualization and tests of the influencing role of perceived risk may be readily observed, and has been suggested (e.g. Biehal and Sheinin, 1990) in previous studies, it has not been methodically applied to elements of corporate reputation and the conditions in which they occur have not received adequate research attention. There is a need for a better understanding of the conditions in which such impact occurs, and this research is a valuable step in that direction.

This study also has multiple managerial implications. If the hypotheses of this study are validated, firms that have a CR for quality should aggressively communicate that information to reduce the customer's perceived risk. Among firms with similar product specs and pricing, those that provide more information about their reputation for quality and CSR

will be regarded as the less risky choice and thus will be preferred by customers. Firms with a reputation for quality and/or CSR may enjoy a competitive advantage over firms with similar product attributes. In contrast to companies who do not have a strong messaging of these CR attributes, they should be aware of their market handicap and strategies should be developed to compensate for it. Such firms should highlight their track record in quality and CSR, such as from reputable third parties, including business trade magazines and trade organizations.

Empirical research demonstrates that perceived risk and the choice of risk reducing strategies impacts organizational buying decisions (Bunn and Liu, 1996; Peters and Venkatesan, 1973). Many studies have examined the role of perceived risk in consumer buying or industrial purchasing, but the majority of this research focuses on the buying of products using information related to what consumers rather than industrial buyers are using. Few studies have examined perceived risk in an industrial buyer context or how corporate reputation information is used to handle the risk. This thesis will study buyer's perceived situational risk in an organizational buying context using corporate reputation information.

The relationship between reputation and risk has been studied from a number of different perspectives. Extensive literature has established a correlation between corporate reputation and its ability to withstand negative events (Dowling, 2004). A company endeavors to develop a reputation which would enable it to offset any negative impact resulting from such events (Beck, 2009). The reputation risk literature has extensively identified companies which take actions to strengthen their reputation in a way that would mitigate the impact of past negative events, as well as to insulate itself from the full impact of potential future negative revelations (Dowling, 2006). While these corporate reputation building initiatives have been observed on the macro level, the explicit link between the CR attributes of quality

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Managers evaluating the potential payback from investments in the building of corporate reputation are likely to be concerned with determining the conditions in which such investments pay back not only through a higher goodwill among regulators, potential employees, and the public at large but also through higher product sales. The findings of this study do not suggest that such direct flow-through of corporate reputation dimensions to product evaluations is likely to be higher in more risky product categories (e.g., more expensive or higher technology products, newer product types) and among buyer segments that experience higher purchase risk.

The findings of these experiments have helped to advance knowledge of the conditions that influence the impact of elements of corporate reputation in the evaluations of industrial

products and services marketed by a corporation in the business-to-business service arena. The results of this study also demonstrated the extent to which it is important to provide additional information related to a firm's quality and CSR. If there were significant differences amongst customers in their level of risk perception in a given product category, firms should segment the market in terms of the customer's degree of risk perception. There is a need for a better understanding of the conditions in which such impact occurs, and this research is a valuable step in that direction.

Organization of the Dissertation

The thesis document proceeds as follows. Chapter 2 discusses previous relevant literature on perceived risk, and information search processes to mitigate risk related to corporate reputation. The previous and emerging research area dealing with perceived risk and its influence on corporate reputation in B2B buying is described, substantiating the importance of this dissertation. Subsequently, the key research in industrial buying behavior and corporate reputation is presented, which forms the theoretical foundation of this dissertation.

Chapter 2 also proposes the Research Model, which is derived from the Process Model of Information Processing (Dowling and Staelin, 1994), the theoretical framework for this study, focusing on two of the main characteristics of quality and corporate social responsibility in information search. Chapter 2 also presents the hypotheses.

Chapter 3 presents the methodology, outlines the development of measurement items for the model constructs, and describes the sample. More specifically, the detailed process used for generating the final survey instrument is explained, followed by a description of the different questionnaire versions. Next, a description of the experimental design and a

description of the dependent and independent variables is provided. The subsequent section then outlines the survey administration, followed by the development of the construct measurement items. These descriptions are followed by the experimental procedures and measurements of the dependent variables. The chapter concludes with a description of results for the pilot study, manipulation checks, and accounts of steps taken to ensure procedural reliability, internal, external and construct validity. The chapter concludes with a description of how the model will be tested and the data analysis procedures.

Chapter 4 tests the proposed research model utilizing Structural Equation Modeling (SEM). It presents the results and identifies the components of the model receiving empirical support. A two-step approach is employed, consisting of confirmatory factor analysis of the measurement model and subsequent test of the structural model. Results from the hypothesis tests are reported.

Chapter 5 presents a discussion of the results, including the implications of the findings. Chapter 5 also presents the main conclusions that follow from the findings of this study as well as cover it's contributions to theory and practice. Chapter 5 also summarizes the research, lists the contributions and notes the limitations of this research. The chapter concludes with suggestions for research extensions.

Supporting material is presented in the Appendices. Appendix A presents the major components of the Biodiesel Purchasing Questionnaire including Section I: Demographic Information. The different versions of the scenario testing each of four conditions for Experiments 1 and 2 are presented in Appendix B. The items used to measure each construct measurement in the pilot study are presented in Appendix C. The Process Model for Perceived

Risk and Information Search (Dowling and Staelin, 1994) is depicted in Figure 1 and the

Proposed Research Model is depicted in Figure 2.

CHAPTER II

LITERATURE REVIEW

Overview

This chapter reviews relevant literature. The chapter is a review and synthesis of existing literature, focusing on the three main areas the influence of perceived risk in B2B markets, information search and corporate reputation. The chapter also discusses the relevance studies dealing with perceived risk in the B2B market, substantiating the importance of this dissertation. Subsequently, the key research in industrial buying behavior is presented, which forms the theoretical foundations of this dissertation. Next, the emerging research area dealing with perceived risk, corporate reputation and buyer intent is introduced, followed by an overview of other disciplines in which perceived risk has been discussed.

B2B Purchasing Risk Literature

Risk is a significant variable across many disciplines, initiated by Knight (1921) in economics and Kogan and Wallach (1964) in psychology. In the current context of risk in industrial purchasing behavior, the foundation was laid by consumer behavior researchers (i.e. Aaker and Jacobson, 1990; Bauer, 1960; Cox and Rich, 1964; Hoover, Green and Saegert, 1978). Many industrial buyer researchers have applied the concept of perceived risk from earlier consumer behavior studies (Mitchell, 1999). While perceived risk in business-to-consumer (B2C) research provides important insights for the study of business-to-business (B2B) marketing, the differences between the two makes it imperative to study perceived risk

for industrial buyers as a distinct discipline (Holland and Naude, 2004). This study focused on the unique characteristics of industrial buying behavior, and demonstrated how information management, in the face of multitudinous risks, is a key element of such behavior. Indeed, the marketing departments of large corporations have risk managers and information officers to manage such situations.

Lazo (1960) was one of the first researchers to identify risk's significance in organizational and industrial purchasing decisions. Since then, researchers' recognition of the risk dimension has become widespread across the literature of industrial purchasing behavior (e.g. Campbell and Goodstein, 2001; Greatorex, Mitchell and Cunliffe, 1992; Levitt, 1965; Peters and Venkatesan, 1973; Puto, Patton and King, 1985), because it is clearly a paramount factor in the ultimate purchasing decision. For the purpose of this study, the perception of risk was viewed and analyzed largely as an individual reaction and response to objective risks as measured by various heuristics of individual judgment and understanding (Beck, 2009). Perceived risk has moreover been included in most models of organizational buyer behavior (Sheth, 1973; Webster and Wind, 1972).

In most industrial buying contexts, these researchers define perceived risk in terms of uncertainty and consequences (Bettman, 1973; Peter and Ryan, 1976; Ross, 1975). It is a multi-dimensional construct which reflects a person's perception of the risk inherent in purchasing products in a specific product category (Bettman, 1973; DelVecchio and Smith, 2005; Dowling and Staelin, 1994). The six key dimensions of perceived risk are financial, performance, physical, time, social and psychological risks (e.g. Cherry and Fraedrich, 2002; Dholakia, 2001; Jacoby and Kaplan, 1972).

Perceived risk is a crucial factor in industrial purchasing. Industrial buyers experience

uncertainty throughout the buying process until it is finalized (Reingen, 1973). Studies which identify perceived risk as having a crucial role in industrial buyer behavior include the purchase or building of an industrial plant (Veres, 2009), the procurement of component parts, (Bello & Zhu, 2006), commercial reproduction equipment (e.g. Newall, 1977), e-business (Zinkhan and Karande, 1991), professional services (Mitchell, 2003) and logistic service providers (Bienstock, 2002). In these studies, uncertainty denotes a situation where it is difficult to predict or control all major variables in a purchasing situation (Klein, Frazier & Roth, 1990 in Bello & Zhu, 2006). Buyer decision-making is a risk-taking activity (Newall, 1977) and perceived risk is often the "deal-maker" or "deal-breaker" in the selection of a vendor, eclipsing other key variables as price, quality, delivery and financial terms (Hawes & Barnhouse, 1987).

As perceived risk permeates the industrial purchasing decision, its competent evaluation is paramount to a firm having profitable and reliable products. According to risk theory, perceived risk increases with a higher level of uncertainty or a greater likelihood of negative consequences (Oglethorpe and Monroe, 1987). Risk theory suggests that negative risk perception reduces the probability of the potential behavior (Oglethorpe and Monroe, 1987). When the buyer is familiar with the product and confident about its performance, the purchasing decision is less risky. However, when the buyer chooses a product in which s/he does not fully know the outcome, there is risk. For example, an industrial buyer who is purchasing a component (e.g. aircraft engine overhaul system) will experience a higher level of perceived risk when the durable functioning of component part is unknown (uncertainty). The buyers are also concerned about their colleagues' and the public's reactions if the part does not function as intended (negative consequences). Thus, purchasing managers

willingness to bear a degree of risk depends on their perception that a breakdown will materialize. For the purpose of this study, the industrial buyer's risk perceptions are conceptualized as the probability and consequence of a risky event (i.e. defect materializing) as perceived by the industrial buyer.

<u>Information's Role in Perceived Risk of Business Purchasing</u>

Perceived risk is has significant impacts on a buyer's tendency to acquire new information (Hirunyawipada and Paswan, 2006). Literature suggests that perceived risk elevates exploratory or information search tendencies (Batra and Sinha, 2000; Campbell and Goodstein, 2001). This is because buyers seek out information to ensure whether the uncertain consequence of new product adoption is at their acceptable levels (Dholakia, 2001; Dowling and Staelin, 1994). Buyers may also seek out novel information about the new products, especially its newness (including technological complexity, unfamiliar attributes, etc.), to ensure that the perceived risk associated with the adoption is at their acceptable level (Hirunyawipada and Paswan, 2006).

There is also significant research on the diffusion of positive information as an input into company's decision-making on purchasing a vendor's products. By collecting data from multiple relevant sources, the purchasing manager reduces the risk of buying an inferior, inappropriate or overpriced product or service. To mitigate uncertainty and handle risk, different types of information are used as an input into company's decision to purchase a vendor's products or services (Dowling and Staelin, 1994; Murray, 1991). The relevant information the industrial buyer utilizes to assess a vendor includes the supplier's price, quality, and reliability (e.g. Blomback and Axelsson, 2007; Bharadwaj Bharadwaj, and Bendoly, 2004; Dempsey, 1978; Dickson, 1966; Lehmann and O'Shaughnessy, 1982;

Matthyssens and Faes, 1985; Wilson, Lilien and Wilson, 1994). Information is utilized to reduce risk beyond extrinsic cues such as price (e.g. Dodds, Monroe and Grewal, 1991) include the clientele and annual report (Blomback *et. al.*, 2007), advertising (e.g. Kirmani, 1990), retailer reputation (e.g. Richardson, Dick and Jain, 1994), firm longevity (e.g. Desai, Kalra, and Murthi, 2008), and the brand name and associations (e.g. Dodds, Monroe, and Grewal, 1991). Buyers also use information sources such as salespersons, advertising, the internet, trade shows (Borghini, Golfetto and Rinallo, 2006), word of mouth, brochures, and articles (Zeithaml, 1981; Moriarty and Spekman, 1984), as well as personal contacts from other markets (Baily, 1998; Henthorne, LaTour and Williams, 1993).

The decision to select a supplier, involves varying degrees of uncertainty, and generally reflects readily available and researched information (Puto *et. al.*, 1985; Mitchell, 2003). The stimulus for information search is largely the purchasing manager's professional mission to reduce uncertainty, and therefore risk (Murray, 1991, Blomback *et. al.,* 2007). To accomplish this, major companies appoint a specialized purchasing manager who is knowledgeable on all aspects of the purchasing decision. Findings show that purchasing managers search for information as a way to reduce risk (e.g. Bunn and Liu, 1996; Newall, 1977; Sheth, 1973; Lehmann *et. al.*, 1974; Roselius, 1971). Generally, the purchasing managers work with other professionals, collectively described as a buying center. The buying center staff adjusts variables such as price, quality and cost for the impact of perceived risk (Hakansson and Wootz, 2001). The buying center systematizes the purchasing process by implementing procedures designed to maximize quality while minimizing perceived risks and costs. The extent that input is actively solicited from selected groups or individuals automatically

broadens the buying center concept to include information sources who will alleviate the risk-perception (Henthorne, LaTour, and Williams, 1993).

Different information strategies in low- and high-risk business purchase situations

Research shows that there is a need to differentiate between low- and high-risk business purchase situations, as the degree of risk perceived is a substantial source of explanation of industrial buyer behavior (Hakansson *et. al.*, 2001). There is a differential use of information sources across high versus low risk purchase situations (Bienstock, 2007). The level of risk a buyer experiences will lead him/her to modify, postpone or avoid buying a product (Bauer, 1967; Das and Teng, 1997; Gupta, Bo-chiuan and Walter, 2004).

The type of information the buyer searches for is shaped by the level of risk that is perceived (Arndt, 1967; Chaudhuri, 2000; Dowling and Staelin, 1994). The stage of the adoption process has a significant influence on the level of risk perception and type of information sought. The greater the risk-perception in the pre-purchase stage, the more buyers search for information to clarify and strengthen their decision-making (Blackwell, Miniard, and Engel, 2003; Henthorne, et. al., 1993; Murray, 1991; Newall, 1977). Risks associated with the purchase of new products in the pre-purchase stage are often high because of the buyer's lack of information and prior experience (Moriarty and Spekman, 1984). Searching for useful information lowers their risk-perception, while raising their level of confidence about their decision.

In the category of high risk is the initial purchase of a good or service, as opposed to repeat and modified purchase. Purchase risk is also likely to be higher when the industrial brand is less well known or when more of the products attributes are of an experiment rather

than a search type (e.g. Cooper, Wakefield and Tanner, 2006; Puto *et. al.*, 1985). The profile of perceived risk in a buying situation affects the weight the purchaser places on various standard buying criteria such as price, quality, service and delivery reliability (McMillan and Joshi, 1972). The diagnostic value of that characteristic of a purchase will vary in accordance with the degree of perceived risk.

The degree of risk and corresponding criteria used to evaluate a supplier also varies across product categories (eg. the acquisition of forklifts and printed circuit boards versus the purchase of MROs, gasteners or capacitors). The degree of perceived risk is related to typologies of industrial purchasing behavior (eg. Bunn, 1994; Johnston and Lewin, 1996). Relatedly, Bunn's study (1994) demonstrates that underlying risk is the main factor in the categorization of industrial purchasing behavior into six categories: (1) casual new-task; (2) routine low priority; (3) simple modified re-buy; (4) judgmental new task; (5) complex modified rebuy; and (6) strategic new task. Empirical investigations have largely confirmed the consistency of this model across organizational contexts and product classes. Although Bunn (1994) does not posit perceived risk as the variable underlying the distinction of the six categories, it is proposed by Anderson, Chu and Weitz (1987) who noted the increasing salience of implied risk in the purchasing decision.

It is also interesting to note that significant variations exist with regard to differing buying situations (eg. straight reorder as opposed to first-time buy (Bellizi, 1980; Mogee and Bean, 1976; Ozanne and Churchill, 1986). The first-time buy situation is closely linked to a high-level of perceived risk, with a heavy reliance on personal contact information sources (e.g. production, purchasing, and engineers) (Brand, 1972; Mogee *et. al.*, 1976).

Customers exercise varying degrees of risk perception, which shapes their acquisition of relevant information. Many researchers (Choffray and Lilien, 1978; Dempsey, 1978; Dowling, 1986; Gronhaug, 2000; Hakansson *et. al.*, 2001; Johnston et. al., 1996; Lehman and O'Shaughnessy, 1974) suggest that buyers engage in greater information search, when there is a degree of decision novelty surrounding the purchase. A novel buying situation which engenders a high degree of decision risk or turbulence (i.e., conflict, uncertainty, lack of consensus) is likely to result in a wider, more extended information search. These findings are supported by many empirical studies (Bunn and Liu, 1996; Moriarty *et. al.*, 1984; Mitchell, 1999; Murray, 1991; Newall, 1977; Robinson, Faris, & Wind, 1967).

Buyers engage in greater data collection and enhanced information search when the buying situation is considered to be riskier than normal (Beatty and Smith, 1987; Bunn, 1994; Cox *et. al.*, 1964; Dowling and Staelin, 1994; Iacobucci, 1992; Mitra, Reiss and Capella, 1999; Moriarty *et. al.*, 1984; Murray, 1991; Murray and Schlacter, 1990). When purchasing situations are perceived to be straightforward, there is a relatively greater use of impersonal information (Zeithaml, 1981; Gounaris, 2005). The Internet, for instance, is more likely to be used for routine orders. There is substantial importance placed on personal sources (e.g. sales representatives) in complex purchasing situations such as earth-moving equipment, computer systems, and large printing machinery (Kennedy and Deeter-Schmelz, 2001; Murray, 1991; Moriarty *et. al.*, 1984). When a buyer is advised by someone, this lowers the level of risk perception (Bansal and Voyer, 2000). The information ensuing from direct experience inspires trust and confidence in the supplier beyond what published sources can provide (Garbarino and Johnson, 1999). The information collected reduces the uncertainty of the purchase decision, which, in turn, provides a more accurate assessment of the cost-effectiveness of the

purchase. This increased information search results from purchasing in a high-risk category (Beatty and Smith, 1987).

Use and prioritization of information is also emphasized in an emerging body of research in knowledge management. This research demonstrates that a buyer's grouping of contacts is based on information sharing. This develops through interaction of stakeholders in the network (Brennan, Canning and McDowell, 2007). The strength of the relationships at those nodes in the network is built on information sharing, and can serve as a basis for building reputation. By actively managing relationships with stakeholders in the network, the risk to the organization's success and reputation is mitigated, and the sharing of knowledge is thereby enhanced (Martin and Gaudenzi, 2009). This information sharing is also propitious to the initial stage of introducing a new product (Read, Dew, Sarasvathy, and Wiltbank, 2009). This is supported by the Internet and growing global integration.

Knowledge is recognized as a characteristic that influences all phases of the decision making process (Morgan, Anderson, and Mittal, 2005) and increased knowledge leads to a reduction of risk perception (Mitchell, 2003). Specifically, having significant product knowledge raises one's ability to assess risk. To gain a competitive advantage, it is necessary to have general information but to also have highly focused data and contextual "knowledge flows" pertinent to the new venture (Zhang, Hoenig, DiBenedetto, Lancioni, and Phatak, 2009). An implication for researchers and practitioners is to understand how perceived risk is impacted by the use and salience of specific types of information, with corporate reputation being one key variable.

Buyers obtain information related to a company's reputation from various stakeholders and sources of information such as salespersons, trade fairs, trade magazines, advertisements

and the internet. Often, a buyer has an instinctive feeling, ensuing from the corporate reputation, that orients him in a particular way about a company. The reputation itself is derived from previous conversations with colleagues or by industry literature (Barich and Kotler, 1991). Corporate reputation (CR) is an important variable because it is a type of short-cut to identifying the qualities desired in the product or service in an environment of research resource constraints (Ang and Wight, 2009). As buyers have limited resources, it leads to using reputation, tangential factors and impressions to replace more objective measures (eg. Blomback *et. al.,* 2007).

The reputation of a company is used as a key component of the information set that influences buyers to purchase a product or service. Of the many decision criteria used in the selection of management consultancy services (eg. price, ordering, convenience, reputation, technical capabilities and service), the most important choice criteria is a reputation for good service (Dawes, Dowling and Patterson, 1992). Likewise, marketing theory shows that consumers also economize on information costs by using the intangible attributes of the producer's reputation as a source of information linked to their buying decision. This is also a way to decrease the uncertainty, and risk associated with the purchase decision (Murray, 1991).

The Use of Corporate Reputation in Risk Assessment in Business Purchasing

Corporate reputation takes various forms in terms of its impact on perceived risk on the buyer. First, there is the corporate reputation of a company's name which excludes the tangible characteristics of its products or services. An example is brand names which are marketable just on the name itself, such as Caterpillar, Dupont, and Honeywell. These brand names provide inherent assurance to the buyer due to their long-term leading role in industry,

obviating risk assessment and further information search (Kotler and Pfoertsch, 2007). A devolved type of corporate reputation results from a lesser recognized company partnering with a well-recognized company and thereby sharing in its special status with buyers. This can be domestic or cross-national where an American company partners with a company in a foreign country, involving its brand name, technology and marketing (Kotler *et. al.*, 2007).

If a company is known to be partnering with a firm that has a major reputation that is seen as granting the subsidiary or partner company that is less well-known a seal of approval, the risk of buying the less-recognized company's products is also substantially reduced (Dollinger, Golden and Saxton, 1997). In a similar fashion, in situations where perceived risk is a purchasing factor, the characteristics of a parent company will generally transfer to the full range of the company's products in the company's portfolio (Biehal and Sheinin, 1998). For example, companies such as General Electric, Toyota, 3M and DuPont market products across many categories, which assume the specific associations and attributes of the parent company, a phenomenon referred to as the halo effect (Coombs and Holladay, 2006). This "halo effect" or transfer of corporate reputation attributes to the subsidiary reduces the perceived risk of the purchaser.

There are many studies which demonstrate that a company's reputation exerts a positive influence on purchasers' attitudes towards a company's products (Brown, 1995). The intangible ideas, associations and images related to the brand of the company are taken into consideration (Aaker and Joachimsthaler, 2000; Blomback *et. al.*, 2007). Many industrial buyers, just like consumers, who have modest product knowledge often use brand names as a guide for evaluating their purchase possibilities (Bendixen, Bukasa, and Abratt, 2004; Dean, 2004). According to the risk reduction hypothesis, a brand name is a signal which mitigates

the probability of making a sub-optimal decision by the buyer (Montgomery and Wernerfelt, 1992). Additionally, brand names are the most important source of information about products across national markets when buyers are not highly familiar with the product (Dawar and Pillutla, 2000).

In the same manner that buyers refer to buyer associations from a brand name to provide psychological equanimity (Purohit and Srivasta, 2001), organizations also refer to the messages projected by reputable companies (Mudambi, 2002). The company's reputation for technological innovativeness and perceived expertise (eg. Brown and Dacin, 1997; Dowling, 1986; Keller and Aaker, 1993), fairness (Belch and Belch, 1987), treatment of customers and employees (Cohen, 1963; Keller and Aaker, 1993), the quality of its working conditions (Heaton, 1967; Kennedy, 1977), in the face of uncertainty are examples. Hence, industrial buyers' familiarity with the parameters of corporate reputation help shape their risk-perceptions.

Researchers have observed that corporate messages related to corporate reputation attributes such as trustworthiness, quality and corporate social responsibility (CSR) transfer to the buyer's assessment of the price point (eg. Brown and Dacin, 1997). Relatedly, these same attributes shape the decision on which products to ultimately purchase (Sen and Bhattacharya, 2001). Quality is of much greater concern to the purchaser than CSR, especially in situations that involve risk (Biehel *et. al.*, 1998).

While these studies do not specify the impact of perceived risk on CR, they do, however, employ a product category and stage of purchase which involve risk. Many of these researchers have used high risk situations (e.g., new medical or technology product), however, the role of the level of risk has not been theoretically specified as a moderator variable. Given

the importance of perceived risk as a potential moderator (Dowling, 1994), it is important to derive it theoretically and to test its role in shaping the effect of specific types of corporate reputation attributes on product evaluations. While it is recognized that a range of CR attributes shape buyer evaluations, the link between perceived risk and CR attributes has not been significantly analyzed. In particular, this research focused on the connection between perceived risk and the CR attributes of quality and CSR. In addition, many of the studies referenced above focus on consumer behavior as it has been more thoroughly studied. The findings of this research are extrapolated to industrial buyer behavior because of the psychological commonalities in decision-making between industrial buyers and consumers.

<u>The Research Model</u>

In order to understand the nature of perceived risk and its relationship to information acquisition, this section of the thesis provides a review of literature pertinent to the theoretical framework of this study, the Process Model for Perceived Risk and Information Search (Dowling and Staelin, 1994; see Figure 1), which predicts and explains the effect of perceived risk on information acquisition and use. The focus of this research addressed how the level of perceived risk is a crucial factor in industrial behavior, including its effects on information acquisition and use.

The basic premise of the Process Model for Perceived Risk and Information Search (Dowling and Staelin, 1994) is that buyers respond to higher levels of perceived risk by relying on different types of available information. The Process Model, which originated in the 1990s, is one of the most cited theories on information processing within organization and buyer evaluations. Motivated by the work of Bauer (1967) and Bettman (1973) who posited that in order for organizations to respond to complexities, in an ill-defined business

environment, and their own internal challenges, buyers must impose order and certainty. To this end, organizations rely on a diverse array of factors related to the efficient processing of information.

Dowling and Staelin's model (1994) elaborates a number of factors that can influence a buyer's perceived risk. The factors are related to the buyer's risk perception of a typical product within a given product class, the level of risk they perceive of any alternatives and the information-search ensuing from the risk perception.

Most of the organizational buying research over the last twenty-five years has followed the seminal works of Robinson, Faris, and Wind (1967) and Sheth (1973). The inclusion of perceived risk in all of their organizational buying models is a clear indication of the importance of this construct in buyer behavior research. Robinson, Faris and Wind (1967) suggested in their concept of "buy task" that much of the variation in organizational buying behavior appears to be related to the levels of risk associated with a given purchase situation. Webster and Wind (1972) introduced a highly conceptual model encompassing environmental, organizational, interpersonal and individual buying determinants. As part of their discussion of the influence of the individual on the buying decision, they included risk-reduction motives as part of the non-task dimension.

Dowling and Staelin's model (1994) is a synthesis of the concepts of risk perception and related buyer behavior developed in several previous models (eg. Peters and Venkatesan, 1973; Robinson, Faris and Wind, 1967; Roselius, 1973; Sheth, 1973; Webster and Wind, 1972). Those concepts include perceived risk, information search, and buyer evaluation and decision-making. Dowling and Staelin model (1994) is an advance because it integrates into a single model the relevant variables which were previously studied independently of each

other. Specifically, Dowling and Staelin (1994) seminal contribution was first, to operationalize perceived risk by integrating the conceptualizations of perceived risk from earlier studies. Secondly, he focused on perceived risk and information search as the key variable in elucidating buyer behavior which went beyond the earlier, less overarching studies.

In comparison to other models of decision-making, 'The Process Model for Perceived Risk and Information Search' (Dowling and Staelin, 1994) is the most appropriate framework for studying B2B buyer's decision making when risk is involved. The Process Model argues that B2B buyers are influenced by different levels of risk and will use a variety of information sources in high risk but do not search for information in low risk situations. The Process Model's (Dowling and Staelin, 1994) ability to account for management and handling of risk is especially useful for investigating decision-making related to high and low levels of risk in B2B buying.

A litmus test of the significance of a model is the degree to which it is utilized in subsequent research. By that criterion, Dowling and Staelin's model (1994) is well-recognized professionally and has gained widespread acceptance as it has been incorporated into a number of important models and studies. Several organizational buyer behavior models include the construct for perceived risk and information search including the source and type of information (eg. Dowling and Staelin, 1994; Sheth, 1973).

Gurhan-Canli and Batra's study (2004) extends the Dowling and Staelin's model (1994) to show that corporate image associations related to innovation and trustworthiness but not social responsibility influence product evaluations more when consumers perceive high versus low risk in the product purchase. Their findings extend previous research by

identifying perceived risk as a moderator of the effects of corporate image on product evaluations. Biyalogosrsky, Boulding and Staelin (2006) extended Dowling and Staelin's model (1994) to create a model of decision making to show that marketing managers are constantly revisiting and updating their bases of information in a decision environment where information is incomplete and uncertain.

As this investigator expected that the CR attributes of quality and CSR moderate customer perceived risk, the investigator hypothesized that in the face of performance ambiguity, reputation for quality and CSR would serve as a proxy for the level of service quality (Kotler and Pforzheim, 2007; Neef, 2003). As such, CR might lead the customer to trust that the received benefits are comparatively good, thereby increasing customer loyalty and lowering their customer perceived risk (Neufeld, 2007). Extant research suggests that as perceived risk increases, industrial buyers engage in different types of risk-reduction activities, such as careful evaluation of alternatives and product trial (Borghini, Golfetto and Rinallo, 2006; Cowley and Mitchell, 2003; Dowling and Staelin, 1994; Park and Bunn, 2003; Scott and Walsham, 2005). When negative outcomes are likely or when uncertainty is high, perceptions of risk increase (Puto *et. al.*,1985).

Of the variables included in this model, this study concentrated on how buyer's risk perception affects information search to mitigate the perceived risk. Although Dowling and Staelin's model (1994) assumes a consumer context, we may infer from previous research its relevance to industrial buying. Research studies on the Process Theory of Information Processing (Dowling and Staelin, 1994) do not explicitly consider specific types of CR attribute information. This model was extended to demonstrate the extent to which industrial buyers respond to higher levels of perceived risk by relying on different types of available

information related to CR. This model was enhanced by the investigator's sub-model for this study which incorporates the use of corporate reputation attributes as relevant information.

Hypotheses Development

Several studies have addressed the interrelationship between perceived risk, information search and buyer evaluation but have not developed a theoretical framework to explain how perceived risk is impacted by the use of corporate reputation attributes. In particular, up until now, studies have investigated the theory utilizing a broad and generalized set of variables. More specifically, previous studies have not explored the relationship between corporate reputation as a type of information that is used in the search for information as depicted in Figure 2. The conceptual framework utilized in this study in Figure 2 demonstrates CR's relationship to perceived risk and buyer behavior. This research proposed to narrow the focus by examining how perceived risk is impacted by corporate reputation alone. The model suggests examining the relationship between information search and types of information related to corporate reputation, and levels of perceived risk. The rationale for using this approach is the premise that different types of reputation attributes might be differently correlated to different levels of perceived risk.

This conceptual model is an application of the standard model (Figure 1), the Process Theory for Perceived Risk and Information Search (Dowling and Staelin, 1994). The Process Model (Dowling and Staelin, 1994) is enhanced by this study's sub-model which incorporates the use of corporate reputation attributes as relevant information. In the Process Model (Dowling and Staelin, 1994) it shows that specific information acquired can alter the individual's perceived risk level. It is expected that buyers will acquire information related to specific attributes of corporate reputation to reduce the risk. It is important to note that the

justification for theorized relationships is based on the belief that individuals use feedback and cues to optimize decision-making (Feldman and Lynch, 1988). The research model is therefore dynamic in that it is able to adjust to updated information.

The hypothesized model structure, definitions for various constructs, and the rationale for relating them and the resulting hypotheses are outlined below, starting with an overview of the conceptual model. This research model contains three general variables. The first is the independent variable of CR-attribute information. The components of CR are quality and CSR. For the purpose of this research, each component can have a strong or weak value. A desire for this type of information follows from the perception of risk on the part of the buyer. This is consistent with Feldman and Lynch's (1988) notion that positive or favorable information exerts an impact on judgment which is disproportionate to the degree of favorable information.

The risk was manipulated by attaching to each of these CR components either a strong or weak argument. The relationship between the CR attributes (i.e. quality and CSR) and buyer evaluation was moderated by a manipulation of perceived risk as being high or low. The construct perceived risk, which moderates the relationship between the CR attributes and product evaluation, is defined in this study by researchers (i.e. Bettman, 1979, Cox *et. al.*, 1964 and Peter and Tarpey, 1975) as the uncertainty and magnitude of consequences if the product is acquired. This was done in order to understand differences in the intended information search behavior of respondents purchasing a given product.

The Role of Corporate Reputation in the Conceptual Framework

The ensuing information search that results from the moderating variable of risk perception is operationalized as corporate reputation. Based on contemporary literature,

corporate reputation is traditionally characterized as the cognitive impressions of an organization (Balmer, 2006). Fombrun and Shanley (1990) define corporate reputation as "a collective construct that describes the aggregate perceptions of multiple stakeholders about a company's performance". For purposes of this research, corporate reputation is a perception of the extent to which a particular vendor company is well-known, good or bad, reliable, trustworthy, reputable, and believable (Brown, 1995). Corporate reputation is determined, moreover, by the perceptions of the company that are held by multiple constituencies (Carmeli, 2005).

Corporate reputation is key to sustaining a company's market share, competitive advantage, and financial performance (Neufeld, 2007). Industrial buyers may have several attributes and associations in memory about a company's product (Kotler et. al., 2007; Walley, Custance, Taylor, Lindgreen and Hingley, 2007). For example, Blomback *et. al.* (2007) and others have shown that there are different dimensions of corporate reputation in business-to-business service relationships related to attributes such as: quality (Kotler et. al., 2007; Tamvakis and Thanapoulou, 2000), perceived trustworthiness (Bennett and Gabriel, 2001), flexibility and mutuality (Lee, 2003), a motivated and skilled workforce (Lagoudis, Lalwani and Naim, 2006), value for money (Cullianne and Toy, 2000), speed, reliability and stability (Tambakis, 1984), a trouble-free, safe product and service (Bennett and Gabriel, 2001), corporate social responsibility (Kotler and Pfoertsch, 2006), leading technology, creativity, exacting workmanship, and prestige (Kotler *et. al*., 2006), strength, durability and tradition (e.g. the reputation of Cemex, the most profitable cement company in the world) and a relationship-oriented approach to management (e.g. Tata Steel). Of these dimensions, this research focused on two: quality and corporate social responsibility because prior research

suggests that these are especially important. These attributes are also manifested in the broad dimensions of character, communication, constituencies, covenant, conceptualizations and culture proposed by contemporary scholars of corporate reputation (Balmer and Greyser, 2006)

Corporate reputation also affects the firm's value by influencing how investors perceive the firm's risk (Carmeli, 2005). CR reduces the perceived risk of doing business by conjuring up positive associations that are informational, evaluative and emotional (Dowling, 2006). Intangible resources such as a company's brand name and reputation impact the overall attitude and quality perceptions of a company, and enhances the firm's value (McMillan and Joshi, 1997). In the event that something bad happens, a company's reputation mitigates its impact (Dowling, 2006). Some of the major sources of risk to a company's reputation are product failure (eg. Firestone's tire crisis, 2000), environmental disasters (e.g. Exxon Valdez oil spill, 1999), and financial malfeasance (eg. Enron scandal, 2001 and Worldcom, 2001). From a financial standpoint, well-respected companies are considered to be less risky entities for investment and attract more investment from investors and stakeholders (Dowling, 2006; Orlitzky and Benjamin, 2001).

There has been extensive literature which has established a correlation between corporate reputation and its ability to withstand negative events in the event that something bad happens. For example, if a company is perceived as a market leader or innovator, these are positive attributes which may buffer any adverse impact to their reputation. However, one area which has not been specifically addressed is the explicit link between the CR attributes of quality and CSR and their impact on perceived risk in the B2B market. To address this missing area of research, the relationship between perceived risk by the buyer and impact of

CR attributes of quality and CSR on his/her propensity to buy a product was studied.

In contrast to research that has already demonstrated the influence of corporate reputation in a number of industrial settings, such as retail (Abratt, Bick and Brown, 2004), the market for circuit breaker panels (Shaw, Giglierano and Kallis, 1989), UK tractors (Walley *et. al.*, 2007), and telephone companies (Hansen, Samuelsen, and Silseth, 2006), this study evaluated the predominance of corporate reputation in buying decisions related to perceived risk. By focusing on the interaction between corporate reputation and its proposed outcomes in a category of service that is in not in line with traditional methodological approaches this study furthers our understanding of how corporate reputation influences buying decisions. Also, more so now than ever, there is a growing trend towards companies being watched all the time and having to explain that they are using green products. For this reason, it was an interesting study to see if the use of biodiesel makes a difference.

Hypothesis of the Strength of CR Attribute 'Quality' in the Conceptual Framework

An attribute of corporate reputation that warranted study in this investigation was quality. A firm's quality of products and services is positively related to organizational reputation (Carmeli, 2005). Buyer's expectations and purchase intentions for business services are influenced by the company reputation (Yoon, Guffey and Kijewski, 1993) which is embodied in its slogans (eg. General Electric: "We bring good things to life"). A firm has a good reputation if buyers believe its products to be of high quality (Carmeli, 2005). Thus, high quality firms are often high-reputation firms, or blue-chip companies (Antunovich, Laster and Mitnick., 2000). Most players in the market prefer to invest in high-quality firms, since this investment is considered safe, yielding above-normal returns.

By definition, quality is the measure of a product and service which is produced to a

high standard and fulfills customer's requirements (Danielis, Marucci, and Rotaris, 2005). Many theorists state that product quality is a key aspect of CR in the evaluation of industrial goods and services (eg. Barich and Kotler, 1991; Brown, 1995; Dowling, 1986; Neadle, 1964). Several B2B companies (e.g. Catepillar, Microsoft, IBM, General Electric, Intel, Nokia, Hewlett-Packard, Oracle, HSBC, UPS, Morgan Stanley, J.P. Morgan, SAP, Novartis, Siemens, Accenture, Xerox, Reuters, Robert Bosch GmbH[2]) position themselves to be high quality service providers (Kotler *et. al.*, 2006). Previous research also suggests that quality efforts such as *Six Sigma*, the total quality initiative, and the recognition for high quality products from the Malcolm Baldridge National Quality Award are important aspects of CR which affect industrial buyer evaluations (eg. General Electric, Anderson, Jerman and Crum, 1998; Kotler *et. al.*, 2006).

Industrial buyers' associations with and impressions of a company's quality involve perceptions about its ability to meet their expectations in production, delivery, marketing, customer service, research and development, employment of advanced manufacturing capabilities and its expertise in technology and engineering (Kotler *et. al.*, 2006). The presence or absence of such investments and expertise should logically indicate to industrial buyers whether the company strives for higher levels of quality in service and manufacturing processes. Thus, when perceived risk is high as opposed to low, it seems reasonable to expect that industrial buyers are more likely to be concerned about the degree to which the product will perform as expected and thus more likely to seek and use corporate conceptions related to factors shaping the company's quality initiatives in areas such as engineering, technology, research and manufacturing capabilities, and previous performance history. Thus,

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[2] The largest automotive supplier in the world.

H1: In conditions of high as opposed to low perceived risk more favorable industrial service and product evaluations are obtained in response to strong versus weak arguments about the corporate reputation attribute of quality.

There is also evidence to indicate that as perceived risk increases, buyers place greater weight and have more reliance on the quality of a company's product and service offerings which will influence the degree of overall perceived risk (Zikmund and Scott, 1973). Zikmund and Scott (1977) noted that as the product class becomes more risky, the strength of the relationships between product characteristics and a set of risk components increased. Because high-risk conditions should raise buyers concerns about the likelihood of product reliability and failure, it is reasonable to expect that buyers in such situations seek information about a company's overall dependability and reliability and about the likelihood that they would be treated with honesty and fairness should they seek redress if things were to go wrong. Thus, it is suggested that the dimension of quality should be diagnostic to concerns of product failure and be important in the determination of product evaluations in high-risk situations. In summary, corporate arguments about quality should influence product evaluations more in conditions of high versus low perceived risk. Such evidence forms part of the reasoning for Hypothesis 2:

H2: Arguments in support of the dimensions of quality in corporate reputation are perceived as more diagnostic when perceived risk of a product purchase is high as opposed to low.

Hypothesis of the Role of the CR Attribute 'CSR' in the Conceptual Framework

The second attribute of corporate reputation that was studied is corporate social responsibility. A B2B company's reputation for CSR is typically defined on the basis of its actions regarding ecology and environmental quality, consumerism, community needs, government relations, labor relations and national responsibilities (Watson, 2007). A reputation for CSR has a role in influencing product evaluations in some specific situations (e.g., for buyers with a high level of social consciousness; for products or services with potentially high impact on either the environment, such as British Petroleum gasoline, or on labor conditions, such as Aso Mining Company (Sen and Bhattacharya, 2001).

Many companies have become responsive to the interest for information about the non-accounting aspects of their businesses including increased interest to reports on CSR in the company's annual report. This is because CSR is one basis for boosting the reputations of an organization in the face of growing media attention and NGO activism (Rowe, 2006; Marquez and Fombrun, 2005). Although spending on CSR initiatives exceeds $1bn per year in the US, there is little evidence on the effects of CSR campaigns on industrial buyers. It is useful to note that 79% of consumers report they would consider good corporate citizenship in making purchase decisions (Sen and Bhattacharya, 2001). It has also been found that 84% of consumers responded that if a particular brand is associated with a positive social cause, they would switch from the brand they are using to the brand associated with the cause (Cone Inc., 2004). It would also be useful to ascertain what percent of industrial buyers would consider good corporate citizenship, including support for popular social causes in making a purchase decision (Margolis and Walsh, 2003).

Several companies (e.g. Caterpillar, Intel, BP) believe that CSR is an important part of their overall image and reputation. These companies spend considerable effort and financial resources to shape it. A company's reputation for social responsibility is often established as a result of cause-related marketing and reflects concerns for the society at large (Kotler *et. al.*, 2006). While CSR is an aspect of corporate reputation, its impact on buyer evaluations is not conclusive, as many buyers are solely influenced by functional product performance (Brown and Dacin, 1997; Keller and Aaker, 1993; Sen *et. al.*, 2001; Winters, 1988).

Prior experimental research in industrial buyer behavior reactions to corporate social responsibility have shown that a company's reputation for being environmentally concerned or community involved and CSR perception is not typically considered diagnostic for evaluations of functional product quality or performance (Fafaliou, Lelakou, and Theotokas, 2005; Sen *et. al.*, 2001). Usually, perceptions of CSR do not affect perceptions of overall quality. It was expected that levels of perceived risk do not moderate the diagnosticity of CSR dimensions and that the CSR dimension does not significantly influence industrial service and product evaluations in either high or low perceived risk situations. Thus,

H3: It is expected that evaluations will not vary as a function of perceived risk when subjects are exposed to corporate arguments about CSR.

This study expected that there exists similar moderating effects of perceived risk on an industrial buyer's perception of a company's quality, aspects that are made more salient when product performance and reliability are not assured as in high-perceived risk conditions. However, this study did not expect that there are similar effects for a company's corporate

social responsibility associations because CSR attribute information may only shape product evaluations in certain specific situation (e.g. for highly environmentally sensitive industrial users of products and services). For the burgeoning research stream on the consequences of perceived risk, which has emphasized that higher levels of perceived risk sometimes make industrial buyers increase their levels of information search and processing (Dowling and Staelin, 1994), the results of this study demonstrated the extent to which industrial buyers also respond to higher levels of perceived risk by relying on different types of available information to different degrees. However, corporate arguments about social responsibility were not expected to influence product evaluations, regardless of perceived risk.

H4: Arguments in support of the dimensions of corporate social responsibility in corporate reputation are perceived as more diagnostic when perceived risk of a product purchase is high as opposed to low.

In sum, it is expected that industrial buyers will focus on different aspects of corporate reputation in developing industrial product and service evaluations to attenuate high as opposed to low perceived risk. According to Feldman and Lynch (1988), relatively more diagnostic information tends to exert a disproportionate impact on judgments and for this reason this research predicted that in conditions of high perceived risk, industrial buyers would arrive at more favorable service and product evaluations in response to strong as opposed to weak arguments about corporate reputation. In contrast, in low-risk conditions, industrial buyers should be more concerned with an industrial service and product's performance attributes than with its likelihood of failure, and thus they should focus more on

product-specific attributes and benefits and should not use arguments about CSR and quality as much.

The Dependent Variable (Purchasing decision) in the Conceptual Framework

The dependent variable is the company's purchasing agent's intent to buy a product. The bottom-line of this study was to identify how risk and CR-attribute information, including quality and corporate social responsibility influences the decision to buy a particular product in a B2B environment. The intent to buy a product is a window from which to view which factors, including their relative importance, influence purchasing manager's decision-making. This construct has been validated in several previous studies as a standard measure of buyer's actual purchasing behavior and was therefore used in this study (Baily, 1998; Brennan *et. al.*, 2007; Bunn, 1994).

Consistent with the Process Model (Dowling and Staelin, 1994), this research proposed that the characteristics of the product class determines the level of overall perceived risk. Product classes such as biodiesel are likely to be perceived as high-risk products because of its relative newness, technical complexity and unexpected side effects (Gatignon and Robertson, 1997; Ram and Sheth, 1989; Rogers, 1983; Sheth, 1973). It is a product that is positively associated with a high level of perceived risk because there is the fear of potential collateral side-effects that have not been thoroughly studied (Laurent and Kapferer, 1985; Zaichkowsky, 1985).

For this reason, biodiesel is the product category of choice in this study. The product is a new, technically complex energy resource that purchasing mangers have little or no prior experience purchasing and is currently in demand. A product category from which to view

these constituent elements is the purchase of biodiesel by municipality fleet purchasing managers. This is a result of recent Presidential Orders (Bush, 2007) encouraging state and local governments to increase their use of renewable energy. As municipality purchasing mangers have little experience purchasing biodiesel, there are a lot of uncertainties and significant consequences for its failure related to its purchase. As a result, individuals may be more likely to use the reputation of a company when finalizing their purchase sources (eg. Keller and Aaker, 1993). In the same manner that Dowling and Staelin (1994) chose a high risk product for his model (i.e. dresses), this study likewise, also used a high risk product category to be consistent with the approach and structure of his model. For these reasons, biodiesel was a useful product category from which to observe how managers use CR information to reduce their uncertainties and apprehensions that it will not measure up to traditional fuels.

Summary of this Literature Review

In summary, prior research points to the importance of conducting further studies to understand the extent to which the two corporate reputation dimensions of quality, and corporate social responsibility are related perceived risk. While these empirical studies are a basis for exploring the conditions from which to study the influence of risk on reputation, it is necessary to do further research to specify and empirically test the moderating role of perceived risk in determining the dimensions' relative impact in order to understand the implications of the role of corporate reputation in managing perceived risk and that was a goal of this research study.

CHAPTER III

METHODOLOGY

Overview

This chapter examines the methodological approach used to determine how perceived risk moderates the effect of two types of corporate reputation (CR) attributes on the evaluations of an industrial good. The chapter begins by providing an overview of the research questions. The research design, which is divided into three distinct stages, will then be examined.

Research Questions

This research specifically focused on the following questions: 1) To what extent does the industrial buyer rely on information related to the CR attributes of quality and corporate social responsibility (CSR) to reduce perceived risk? 2) To what extent will industrial buyers find certain dimensions of CR more influential for their industrial product evaluations than other dimensions in high- as opposed to low-perceived risk conditions? 3) As prior experimental research has shown, CSR perception is not typically considered diagnostic for evaluations of functional attributes (Sen and Bhattacharya, 2001). This study addressed the question of to what extent does the CSR dimension significantly influence industrial product evaluations in either high or low perceived risk situations.

Research Design

There were several hypotheses tested by the application of the model. Two experiments were conducted to test these hypotheses. The first of these experiments will focus on the corporate reputation dimension of quality and it's impact on levels of perceived risk (high versus low). The second of these experiments did the same for the corporate reputation attribute of CSR. The research was implemented in three stages. In stage 1, a research instrument was designed including scenarios which were constructed to simulate a real-world buying decision. The pilot study was then given to test the validity and reliability of this survey. In stage two, the research instrument was administered to purchasing managers. The resulting data was collected and organized. Finally, in stage three, various statistical methods including structural equation modeling were used to analyze the data.

Stage 1: Research Instrument Development for each Experimental Manipulation

In stage 1, a scenario-based, multi-item questionnaire was developed. A scenario-based survey is used in this study because it is a means to obtain valid results (Hair *et. al.,* 2007). The scenarios attempted to simulate a real-world purchasing decisions using varying levels of risk perception and strength of corporate reputation attributes (ie. quality and CSR). In the creation of the scenario, it was important to design it in such a way that a different level of risk (high versus low) could be detected. Based on the factor analysis results (Appendix F), an estimate of all the constructs hypothesized to affect the risk reduction behavior, namely level of perceived risk and corporate reputation arguments for quality and CSR, were reported. After the initial pool of items were examined by pre-test students, the list of items

was increased/decreased based on the pre-test survey of factor analysis and the recommendations of the municipality biodiesel purchasers.

A panel of judges, recommended by the National Biodiesel Board, was asked to refine the purchase situation to make it as realistic as possible. This panel was comprised of authorities from the industry's leading institutions, such as the U.S Department of Transportation, American Council of Renewable Energy and the City of New York Department of Transportation. The interviews with the judges were done via one-on-one telephone interviews.

The research instrument consisted of three major components. The first of these collected background information (see Appendix A), the second presented the scenario (see Appendix B) and the third was a questionnaire assessing the six constructs involved in this study (see Appendix C). The third component included items derived from both interviews and scales referenced in the *Handbook of Marketing* (2002) to ascertain six constructs: 1) buyer intent/product evaluation (17 items), 2) diagnosticity of information (5 items), 3) rating of attribute importance (11 items), 4) rating of perceived risk (10 items), 5) rating of strength of corporate reputation arguments (5 items) and 6) rating of involvement in scenario (4 items). The first of these constructs, buyer intent/product evaluation, was the dependent variable. Based on qualitative research and a review of the literature, six measures were developed and employed to capture the perceived risk construct.

To capture perceived risk, Gurhan and Batra's instrument (2004) was employed, which they developed specifically to assess risk in purchasing a new, technically complex product. For product evaluations, subjects evaluated the target product on six scales anchored by "very unfavorable/favorable", "very bad/good", "very negative/positive," "very weak

proposal/strong proposal," "very unacceptable/acceptable," and "very ambiguous/clear" (see Appendix C). The items were averaged to form a product evaluation score.

Three items originally designed to assess purchase intention (Gurhan and Batra, 2004) were revised to reflect the bio-diesel-buying context. The overall reliability for these scale items was found by Gurhan *et. al.* (2004) to be alpha = 0.92. Nine additional items tapping purchase intent in a B2B buying context were added based on the advice from municipality purchasing agents. These twelve items were summed for an overall measure of purchase intent. These items were also assessed by the number of subjects who indicated a willingness to buy the product under the conditions presented in the scenario. The remainder of these constructs functioned as a manipulation check to ascertain the degree to which there was a successful manipulation of CR attributes of quality or CSR influencing the subjects overall perceived risk. While the pilot study used a large number of items to reflect each variable, with factor analysis, the scale was refined to reflect the same variable with a fewer number of items.

Subjects provided their ratings of each of the variable's items, and the items of each variable had factor scores that were used to form that variable's specific index. All variables, except for cognitive responses, were operationalized on either five or seven point scales anchored by 1 and 5 and 1 and 7. Following the basic scenario, subjects were asked to write down any thoughts which had occurred to them while they were reading through the information.

The resultant research instrument was derived from both researched items and input from industry executives. Eight different permutations of the purchasing scenario were utilized to test the conditions of this study. The first four permutations tested the effect of the

dimension of quality on perceived risk. This comprised Experiment 1. Experiment 2 concerned itself with the final four permutations which attempted to test the dimension of CSR on perceived risk.

Experiment 1; The Independent Variable Related to the CR Dimension of Quality

The strength of the corporate arguments for the CR attribute of quality were manipulated in two ways (Appendix B). In the first, the scenario attempted to quantify the attribute of quality by averaging the subjective ratings of three previous customers on a scale of 1 to 10. In the case of the strong CR–argument for quality, Northern States Biodiesel Company was assigned a rating of 8.81, as opposed to Inter-Mountain Biodiesel, Inc. was given a lower rating of 3.65. Except for this discrepancy in the quality rating, everything else about the two companies was identical (i.e. compliance with the American Society of Testing and Materials, BQ-9000 Certification, cold weather properties, feedstock, delivery and volume). The properties of biodiesel fuel listed in the contract specifications of the scenario (see Appendix B) are the key characteristics considered by purchasing managers in formulating their purchasing decision (Anslow, 2007; Byun, 2001; National BiodieselBoard, 2006).

Then, the strength of the corporate arguments for the CR attribute of quality were manipulated by using the rankings of the biodiesel suppliers allegedly obtained by an fictitious organization American Biodiesel Fuel Association. In the strong versus weak condition, subjects were told that Northern States Biodiesel Company ranked high, as opposed to low, in the American Biodiesel Fuel Association corporate reputation survey for quality.

Subjects also rated the degree to which CR arguments for quality were relevant and useful for their evaluation of the biodiesel fuel (see Appendix B). Subjects rated the diagnosticity of the information on scales anchored by "extremely irrelevant/relevant," "the

information was of no use/great use," and "the information was not diagnostic at all/highly diagnostic." These items (three items) were derived from the *Handbook of Marketing*. To strengthen the validity of the index, ten additional items were included. These were averaged to form a diagnosticity index.

Subjects also rated the strength of the CR attribute arguments for quality on eight scales anchored by "very weak/strong," "not very convincing/convincing," "not very powerful/powerful," "unpersuasive/very persuasive," "does not have a major impact/has a major impact," "not very influential/influential", "not at all credible/totally credible," and "does not inspire confidence/inspires confidence" (see Appendix C). These items were then averaged to form indices of corporate argument strength and used as manipulation checks.

Moderating Variable: Perceived risk

For perceived risk, subjects were told that the American Biodiesel Fuel Association tested several gallons of biodiesel and compared them with regular diesel. In the high-risk condition, subjects were told that biodiesel has a 40% greater chance over regular diesel of not performing as expected (see Appendix D). In the low risk condition, they were told that biodiesel has the same chance as regular diesel of not performing as expected. This was presented in the same format for both Experiment 1 and Experiment 2.

In order to measure perceived risk, a five-item perceived risk scale developed by Gurhan and Batra (2004) for a new product was used as a starting point. Their scale resulted in a reliability of alpha= 0.82. In the current study, an additional 5 items specific to the purchase of biodiesel in a B2B context (i.e. "very little risk", "a great deal of risk", "very low/high risk purchase," "does not involve risk/involves risk", "very dangerous" / "not very

dangerous," and "has potential negative consequences" / "does not have potential negative consequences") was included to further strengthen the reliability of the original scale.

Subjects also indicated their level of agreement with five statements: "the decision to purchase biodiesel involves high risk", "biodiesel has the same chance as regular diesel of not performing as expected", "the likelihood of biodiesel performing as expected is significantly lower than the likelihood of diesel performing as expected," "there was a great deal of uncertainty surrounding this purchase," and "we had all the information that we needed to make the purchase decision". These statements pertaining to the risk associated with biodiesel were anchored on scales of "strongly disagree" and "strongly agree" (see Appendix D).

Subjects also indicated the extent to which they were involved while reading the information (i.e. "not at all/highly interested," "not at all/highly involved," "not at all/highly engaged," "not at all/highly concerned," and "not at all/highly attentive"). These items were averaged to form an involvement index. The coefficient alpha for this set of items was also measured.

Experiment 2

Product evaluations, diagnosticity, manipulation and confound checks were measured in Experiment 2 in the same manner that they were assessed in Experiment 1. The corporate-related arguments were similar to those used in Experiment 1, but rather than having one item describe the dimension of quality, there were instead two items used to describe the dimension of CSR (see Appendices B). The two items which described the dimensions of CSR included 'the biodiesel manufacturer declares commitment to keeping the earth green and positively protecting the environment' and 'the company regards the protection of the earth to be one of

its most important management issues and is continually developing its corporate approach to preserve the environment for later generations.'

In addition, subjects will rate the extent to which Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are leaders in CSR ("strongly disagree' versus "strongly agree") and to what degree does Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. have CSR ("No CSR/Very high CSR"). The two items were averaged to form a CSR index.

<u>Follow-up Pilot Study</u>

A pre-test sample in the pilot study provided an evaluation of the survey and the items which comprised each of the constructs. The questionnaire for the pilot study was tested and modified before it was used for telephonic and on-line data collection. Possible misunderstandings of the questions were also considered and the questionnaire was revised accordingly.

The sample for the pilot study consisted of 194 business major undergraduate students at a major university in the northeastern United States who participated on a voluntary basis. All 194 respondents completed the survey. None of them had prior experience purchasing biodiesel. At least 15 questionnaires were given to each group of students per condition to test the reliability and validity of the constructs in the research instrument. While the use of undergraduate business school students as surrogates for biodiesel buyers might raise the issue of external validity, the pilot study made it possible to determine if the material on the questionnaire could be read or comprehended (Gupta, 2004). Thus, for the purpose of pilot testing, students are appropriate for refining and validating a survey instrument.

The findings of this study can be generalized to other B2B product categories because the factors which are constituent elements of the purchasing decision to select a new biodiesel supplier are the same factors used to describe the purchase of all B2B products in which there is a degree of uncertainty. Such factors include the description of biodiesel as a new, technically complex product that purchasing managers have little or no prior experience purchasing and is currently in demand as a result of recent Presidential Orders (Bush, 2007) encouraging state and local governments to increase their use of renewable energy. These factors are likely to be correlated with the degree of perceived risk (Valla, 1982). In addition, individuals may be more likely to use corporate associations when forming product responses (eg. Keller and Aaker, 1993). For these reasons, biodiesel is a useful product category from which to observe how managers use CR information to reduce their uncertainties and apprehensions that it will not measure up to traditional fuels.

As a benchmark of reliability, Cronbach's (1951) alpha will be used (Nunnally, 1978). As Cronbach's alpha is referred to, the reliability of the results should be in the range of .56 - .94 for factors measured by three to seven items (Roth, Switzer, and Switzer, 1999; Nunally, 1978). The scales for all multi-item measures were obtained by adding the item scores to generate a single composite risk index. High versus low loadings was considered to confirm whether there is discriminant and convergent validity (Bagozzi and Yi, 1988; Churchill, 1979).

Data Collection

The sample frame (n = 102) was limited to actual or prospective purchasers of biodiesel of municipal or commercial fleets. A combined total of 10,000 potential subjects were contacted utilizing both a face-to-face conference (see Table 1) and online approach. The

combined response rate was expected to be approximately 1%, which will result in a useful sample size of 100 biodiesel purchasing managers. After IRB approval was obtained, the survey was administered to subjects while at the conferences and online utilizing Surveymonkey.com.

To increase the likelihood of attaining a statistically significant sample size, invitations to participate in the study were done by utilizing three distinct methods: 1) By the researcher's direct, personal contact at the various conferences and events. The principal investigator approached individual subjects and solicited his/her participation in the study by asking him/her to participate. If the subject agreed, then he received a cover letter which explained the purpose of the survey and promised confidentiality. It also included the names of professors involved in the study, and a contact phone number. It was expected that the response rate will be very high as previous studies done of this nature had very high response rates (e.g. Ewing et. al., 1999).

In addition, 2) Surveymonkey.com, an online data collection service, to supplement the data collection process was utilized. A list 1000 fleet manager email addresses from the Internet was generated. One questionnaire was sent corresponding to a specific condition to each of the 125 randomly selected email addresses.

In addition to collecting data from conference participants and Surveymonkey.com, an agreement was established with 3) Trade associations (i.e. The Association of Equipment Management Professionals (AEMP.org), The National Conference of State Fleet Administrators (NCSFA.org), and *Government Fleet Magazine* to email the research questionnaire to their members and subscribers via their respective online survey distribution account (e.g surveymonkey.com). A proposal (see Appendix E) was submitted which

requested that the association email a survey which would be completed by their members who are transportation fleet managers who purchase biodiesel. Should the trade organization agree to the proposal, the trade associations would then collect all the data provided by the respondents and forward it to the researcher.

An agreement with *Government Fleet Magazine* was established where for a fee they sent the surveys via their Surveymonkey account to up to 5,000 contacts in their database over a 10 day period that we designate. It was expected that there would be at least a 1% response rate resulting in a sample of 50 respondents. This contributed to satisfying the statistical sample size requirements (i.e 100) of the research.

Procedure

For Experiment 1 and 2, participants were randomly assigned to conditions by the trade associations and magazines which agreed to distribute the survey via Surveymonkey.com to their members or subscribers on behalf of the researcher. They were told that they would receive some information about two producers of biodiesel. After responding to the dependent measures, subjects were thanked and debriefed. No subjects guessed the real purpose of the study.

After the pilot study was conducted, members of the principal test sample were given the 'Biodiesel Purchasing Questionnaire' to elicit their responses. The principal test sample consisted of 102 purchasing managers. In conducting the principal test of the research instrument, the following instructions were given. The respondents were told that the principal researcher would be conducting academic research for a class on the marketing of bio-diesel. The subjects were asked to complete Section 1: 'Demographic Information' which profiled

the respondents and their organization to ascertain their biodiesel usage (14 items), level of

biodiesel knowledge (3 items), purchasing status of respondent (1 item), and current position,

gender and ethnicity (three items) (see Appendix A). Items 15-18 ascertained the biodiesel

purchasing status of the respondent. These items also served as filter questions to ensure that

participants were actual and prospective buyers of bio-diesel.

Then, the respondent was asked to read the instructions in Section 2 (see Appendix B).

The respondents were then asked to answer the forty items that are in Section 3 of the study

(see Appendix C). The questionnaire was collected and put in a location which was accessible

only to the researcher. This procedure was repeated with each respondent. Content analysis

and descriptive statistics were used to describe the outcome of the data generated from

Section 1 'Demographic Information' and Section 3 'Questionnaire'.

The subjects were also told that they would not receive any monetary compensation for

their participation but that they would be helping to further academic research in the biodiesel

purchasing process. The survey recipients remained completely anonymous. Their anonymity

was protected by the fact that each questionnaire was identifiable only by a code number

necessary to reference it in the database.

With regard to the online approach utilizing Surveymonkey.com, for each of the 8

conditions, 125 email addresses were randomly selected, without replacement, from the total

list of 1000 fleet manager email addresses that were generated using the Reference USA

database. Subjects who are randomly assigned to each condition received an email which

identified the researcher, briefly describing the nature of the research and requesting

participation**.**

For both the trade associations and publication, the survey was transferred from the

researcher's Surveymonkey.com account to the respective organization's online survey distribution account. When the trade associations and publication agreed to email the online Biodiesel Purchasing Survey via their online survey distribution account, the introductory letter and surveys were transferred from the PI's surveymonkey.com account and remained unchanged from what was currently being used by the researcher in their current Surveymonkey.com. The only change was that the trade association and publication would be the originator of the emails. In order to ensure the confidentiality of their subscribers and members, at no point would the trade associations or *Government Fleet Magazine* allow the researcher to have access to any email addresses or the identities of any of the individuals in their database. As a result, the anonymity of the survey respondents was protected which was essential for this academic research.

In both the online and face-to-face conference methods of data collection, after the questionnaire was given, subjects were told by the PI that the scenario presented was completely hypothetical, and did not correspond to any currently existing real-world situation in terms of the names of the companies and the facts presented. This debriefing was provided to ensure that information presented in the scenario was fictitious and did not influence their future real-world decision–making. In addition to the verbal explanation, subjects were also given a written document to this effect on Nova Southeastern letterhead**.**

Stage 3: Data Analysis

The data was analyzed utilizing SPSS 17.0. SEM. As suggested by Anderson and Gerbing (1988), the measures were verified through a two-step procedure): 1) the pilot test and 2) confirmatory factor analysis. Cronbach's alpha coefficient was used for verification of construct reliability. The significance level of all tests was $p<0.05$ (Hair et. al., 2007). The

overall results for the base model was reported to see if they provide support for the hypotheses.

To test the significance of the hypothesized relationships, structural equation modeling (SEM) was used (Byrne, 1998; Joreskog and Sorbom, 1996). Simple regression analysis was used to ascertain the relationship between perceived risk, corporate reputation attributes of quality and CSR, and buyer intent. Three types of fit analyses were used to assess the overall model fit: the comparative fit index (CFI), the goodness-of-fit index (GFI) and the root mean square error of approximation (RMSEA). Because the level of risk (i.e. high versus low) and strength of CR-attributes (i.e. strong versus weak) are different for each scenario, the perceived risk ratings were expected to vary accordingly.

Methodological benefits and limitations

A major benefit of this methodology derived from the use of a scenario/simulation technique. This technique made the findings of this study more realistic as purchasing managers were placed in a situation which simulates a real-world purchasing decision which enables the study to focus on realistic situations rather than potential buying behavior. In addition, the scenario-based interviewing method has been used effectively by other B2B researchers and yielded a rich data set to generate important findings.

Another advantage of this study was that it involved direct participation of biodiesel purchasing managers as opposed to students. As a result, the data generated should be more valid and grounded in the real world. The interviews setting for the experiment facilitated the rigorous testing of the hypotheses. Biodiesel is especially well-suited to testing the proposed construct of high versus low conditions of perceived risk, since it involved a relatively high level of perceived risk in general, and yet there exist varying degrees of risk perception across

different individuals, a situation where risk-reducing strategies are most pronounced (Gemunden, 1985).

The main limitations of the present research are associated with the use of just one product category in the research. Future research should replicate the study in other product categories and include other types of CR attributes. While the CR attributes in this study are not comprehensive (i.e quality and CSR), they touch on some of the more relevant and pressing concerns of marketing in the B2B context

Although the initial sample of panel judges will be carefully chosen for knowledge of bio-diesel, it may turn out by the end of the study that some raters may be more knowledgeable than others. An improvement to the methodology in the demographic section of the questionnaire used in this study would be to define exactly what does high, medium or low level of knowledge of biodiesel mean since what one person believes to be a high level of knowledge may be a low level of knowledge for another. However, for the purpose of this study, this information is used to provide a rough approximation of the participants as active rather than passive users of the knowledge related to bio-diesel. The validity of the survey could be increased by skewing the results in the direction of the most knowledgeable.

Summary

This study reported on the results of experiments that manipulated the level of perceived risk, one for each attribute, in a novel and technically complex purchase decision. This study then tested how perceived risk reduces or enhances the effect of these elements of CR (i.e. quality and CSR) in determining industrial service evaluations of bio-diesel.

CHAPTER IV

ANALYSIS AND PRESENTATION OF FINDINGS

Overview

Chapter 4 reports the results for descriptive statistics, factor analysis, and structural equation modeling. It includes research instrument development in the first stage, the pilot study including Cronbach's alpha and factor analyses in stage 2. Subsequent test of the structural model is reported in Stage 3 utilizing Structural Equation Modeling (SEM). The components of the model receiving empirical support are reported as well as results from the hypothesis tests.

Research Instrument Development for each Experimental Manipulation Utilizing Expert Feedback

In the first stage, the design of the final survey instrument, scenarios and their measurement items were assessed for content validity. To do this, a thorough ongoing literature review was complemented by expert opinion, based on which a preliminary questionnaire was developed. To enhance the validity of the questionnaire which reflects the important relationship between a construct and its measurement items (Carmines and Zeller, 1979), knowledgeable colleagues and industry experts in both industry and academia reviewed and provided feedback on it's content, completeness, and understandability. Insights from this step led to further enhancements of the final questionnaire for the main survey. A

total of 18 experts were identified and contacted, out of which 14 provided valuable feedback. Ten participants were purchasing managers of biodiesel for municipalities, who were chosen because from prior conversations with them it was known that they actively practice purchasing of biodiesel. Advice was also solicited from the City of New York Department of Transportation. Five participants were academics researching purchasing issues, and teaching B2B marketing and purchasing courses. One respondent was from the industry's leading institutions, such as the U.S Department of Transportation. Another respondent was from the American Council of Renewable Energy. Advice was also solicited from the Director of the Indiana University Stat/Math research center at Indiana University to assess the questionnaire design and survey procedure. The combination of the input from this panel of judges refined the purchase situation to make it as realistic as possible.

In response to their suggestions, the design, structure, and measurement items of the Biodiesel Purchasing Questionnaire were modified and refined for the pilot study. The final measurement items for the main constructs and variables are presented in Appendix D: Construct Measurement Items to be measured by Pilot Study. The items were measured on both five and seven-point Likert-type scales ranging from 'strongly disagree' to 'strongly agree'.

Pilot Study Results

A pilot study was conducted to assess the reliability of the multi-item scales with inter-item, item-to-total correlations and reliability measures for Experiment 1 (n=114) and Experiment 2 (n=80). The pilot included subjects who completed hard copy versions of the questionnaire. College students (N = 194) who were students at a major university in the

northeast United States were used in the pilot in order to test the comprehensibility of the survey and the reliability of the scale items**.**

The result was a 40-item instrument with 2 items for CSR in the Biodiesel Purchasing Scenario for Fleet Vehicles: "the biodiesel manufacturer declares commitment to keeping the earth green and positively protecting the environment" and "the company regards the protection of the earth to be one of its most important management issues and is continually developing its corporate approach to preserve the environment." The pilot study respondents were also asked to evaluate the supplier in terms of the items which support this CSR attribute.

Cronbach-alpha values were computed for each scale with the appropriately scaled scores. Results are reported in the Table 1 and 2 and show strong values (alpha>.7) in all surveys. A measure was considered reliable if the reliability index was at least 0.70 (Nunally, 1978). As can be seen from Tables 1 and 2, the measurement item loadings are all well above the suggested threshold value of 0.30 (Bagozzi and Yi, 1988). (O'Leary-Kelly nd Vokurka, 1998; Roth, Switzer, and Switzer, 1999; Nunally, 1978).

Overall, the Cronbach statistics for each construct studied in Experiment 1 and 2 indicate reliability in each of the scales. The results are summarized for each scale separately (Tables 1 1-2). To establish that each scale measured only one factor, principle components factor analysis was conducted. The scale items for each construct loaded significantly on each of their respective dimensions (see Appendix F). The aim of the PCA was twofold: first, to assess if the items grouped into a number of distinct and meaningful factors. Secondly, to assess if the appropriate items loaded substantially on their hypothesized factors. That was

seen as necessary to differentiate the scales into aspects of reputation in relationship to

perceived risk and consequences of reputation, analogous to the theoretical conceptualization.

Table 1. Pilot Study Results for Using CR argument for Quality and CSR: Cronbach's Alpha values and Factor Analyses

Scale	Number of Items	Sample Item	Chronbach alpha	Variance (largest) extracted in first factor
Buyer Intent	17	• Excluding all factors other than quality/CSR, which company' bio-diesel would you select? • How likely are you to buy from Indiana Bio diesel company? • How likely are you to buy from Northern Biodiesel/Inter-Mountain? • I have a good feeling about the company.	.80	71%
Diagnosticity of Information	5	• The information that was provided in the purchasing scenario was____for your evaluation. • To what extent is the attribute quality important in making your decision?	.83	86%
Rating Attribute Importance	12	• To what extent would you say that quality/CSR is relevant to your choice? • In making a final decision, how important was supplier reputation for quality/CSR in this purchase decision?	.82	89%
Rating Perceived Risk	10	The scenario had: • Very little risk 1 2 3 4 5 6 7 A great deal of risk • Very low purchase risk 1 2 3 4 5 6 7 Very high • Does not involve risk 1 2 3 4 5 6 7 Involves risk	.67	31%
Rating Strength of Corporate Argument	8	Please rate the information related to quality/CSR as: • Very weak 1 2 3 4 5 Very strong • Very convincing 1 2 3 4 5 Not very convincing • Not very powerful 1 2 3 4 5 Very powerful • Unpersuasive 1 2 3 4 5 Very persuasive • Does not have a 1 2 3 4 5 Has a major impact major impact	.76	94%
Involvement in Scenario	5	To what extent were you involved while reading the information? • Not at all involved 1 2 3 4 5 Highly involved • Not at all interested 1 2 3 4 5 Highly interested • Not at all engaged 1 2 3 4 5 Highly engaged • Not at all concerned 1 2 3 4 5 Highly concerned • Not at all attentive 1 2 3 4 5 Highly attentive	.87	89%

Final Study Results

Demographic Information

Demographic information pertaining to the study participants was collected and analyzed

to provide a broader, contextual framework for the results (Tables 3– 6). The validity of the

study is reinforced by the fact that the sample of 102 responses consisted of a group of highly

seasoned professionals as evidenced by the mean number of six years of purchasing biodiesel

for their fleet.   Around 102 usable questionnaires were completed via Surveymonkey.com,

with a response rate of 1% from a sample frame of 10,000 respondents who were management

and administrative workers from small to middle-sized municipal and commercial fleets who agreed to participate. Of the subjects who completed the survey, the entire sample (100%) was comprised of one hundred and two male participants. The majority of the sample by ethnicity was white (90%), African-American (3%), Hispanic (3%), Asian (3%), and Native American (1%).

Respondent demographics were also collected in relation to the current position and years in current position. The sample had a mean number of six years of purchasing biodiesel for their fleet. The fleet managers had a high of 26 and low of 1 year of experience. Of the 102 subjects who completed the survey, 82 reported the following years of experience: forty three percent of the participants had between 0 - 4 years, another forty-three percent had 5 – 9 years, seven percent had 10-14 years, six percent had 15-19 years, and 1% had 20-25 years of experience purchasing biodiesel for their municipal or commercial fleet. Of the 101 respondents who reported their level of biodiesel purchasing knowledge, 33% described their level of biodiesel knowledge as high, another 45% as medium, and the other 22% as low **(**see Table 2).

Table 2. *How would you describe your level of bio-diesel purchasing knowledge?*

	Frequency	**Percent**
High	35	34%
Medium	50	49%
Low	17	17%
Total	102	100%

The types of management professionals who initiated the purchase of biodiesel fuel included Directors' of Equipment and Maintenance, Fleet and Vehicle Emissions Managers as well as other related positions (see Table 4). Twenty-one percent of the participants reported

their position as a fleet manager, while the remaining 79% reported their position in other

equipment, transportation and fleet management related positions**.**

Table 3. Summary of Job Titles Reported on Questionnaire

Summary of Job Titles	Number	Percent	Summary of Job Titles	Number	Percent
Asset Manager	1	1%	Fleet Operations Manager	1	1%
Automotive Manager	1	1%	Fleet Operations Superintendent	1	1%
Business Manager	1	1%	Fleet Owner	1	1%
Chief Automotive Engineer	1	1%	Fleet Program Manager	1	1%
Chief Engineering	1	1%	Fleet Services	2	2%
Coordinator Department of Energy Clean Cities Program	1	1%	Fleet Superintendent	1	1%
Director	3	3%	Fleet Supervisor	2	2%
Director Fleet Central Services, Sanitation of Street and Fleet Superintendent	1	1%	General Manager of Transportation	1	1%
Director of Equipment and Maintenance	1	1%	General Services Director	1	1%
Director of Facilities and Fleet Management	2	2%	Group Leader	1	1%
Director of Fleet Administration	1	1%	Maintenance Supervisor	1	1%
Director of Fleet and Material Management	2	2%	Maintenance Coordinator	1	1%
Director of Fleet Maintenance	1	1%	Maintenance Specialist/Contract Manager	2	2%
Director of Purchasing & Contract Services	1	1%	Manager	1	1%
Director of State Fleet Services	1	1%	Office of Fleet Management Administrative Services	1	1%
Director of Transptoration Services	1	1%	President	2	2%
Dispatcher	1	1%	Public Works Director,	1	1%
Division Chief	1	1%	Regional Fleet Manager	1	1%
DOT IT Supervisor	1	1%	Senior Technical Analyst	1	1%
Engineer	1	1%	Shop Foreman	1	1%
Equipment Maintenance Supervisor	1	1%	Specifications Manager	2	2%
Equipment Manager	2	2%	Superintendent	1	1%
Equipment Superintendent	2	2%	Superintendent of Shops and Equipment	1	1%
Equipment/Shop Manager	1	1%	Superintendent of Vehicle Maintenance	1	1%
Fleet Analyst	1	1%	Transportation Coordinator	1	1%
Fleet Contract Manager	1	1%	Transportation Director	2	2%
Fleet Division Manager	1	1%	Transportation Equipment Repair Manager	1	1%
Fleet Maintenance Supervisor	3	3%	Transportation Supervisor	3	3%
Fleet Manager	20	21%	Vehicle Emissions Manager	1	1%
Fleet Manager/Community Liaison	1	1%	Vehicle Maintenance Supervisor	1	1%
Fleet Operations Manager	1	1%	Total Number	96	

Of the 70 participants who reported who else is involved in the decision-making process of purchasing biodiesel, 18% said he was the sole person responsible for the purchasing while the other 82% reported that s/he was a part of a multi-person decision making group which included engineering, purchasing and government-related entities amongst others (see Table 4) **.** This latter group of respondents is in keeping with B2B literature which says that the decision making is performed by a group of individuals or a buying center (Bunn, 1996) and is consistent with what would be expected from B2B literature**.**

Table 4. Summary of Responses to "Who else is involved in the decision-making process of purchasing biodiesel?"

Sole Decision-Maker ("no one else," "I solely make the decisions," "just myself")	13	My Boss	1
Assistant manager	1	My Staff and City Purchasing Staff	1
Business Manager	1	Only when price difference exceeds $.30 per gallon.	1
City Council, Climate Protection Program	1	Operations Management Director, County Administrator and County Board Commissioners	1
City Manager and Counsel	1	Operations Manager	2
Colleagues (one other)	7	Our Business Manager and Supply Chain personnel	1
College Fleet manager	1	Politicians (e.g. the Governor, Mayor and City Council)	3
Company President	1	President	1
Department Manager	1	Procurement, Fuel Quality Specialist	1
Department of General Services	1	Public Works Director	2
Department Of Transportation Personnel	1	Purchase agent	1
Deputy Chief of the Purchasing Department	1	Purchasing	3
Deputy Director	2	Village Manager	1
Director of Transportation	1	Regional manager	1
Each Fleet manager, Environmental Officers	1	Shop managers, Automotive engineers	1
Engineers	2	Supply Chain/Purchasing	3
Fiscal Staff	1	The Assistant Director of Purchasing	1
Fleet Manager and purchasing buyer.	1	The management of the Department of Transportation who have supported our decision to purchase this fuel.	1
Fleet Superintendent	1	The State	1
General Services Manager	1	Upper Management	1
Legislators, State law mandates 20% reduction of petroleum product use by 2011	1		
Marine Corps Headquarters (Wash D.C)	1		

This sample is representative of the population which is comprised of fleet managers of commercial and municipal fleets who purchase biodiesel. The magazine such *as Government Fleet Magazine* distributed the questionnaire to a large sample of up to 10,000 fleet managers in the United States. The recipients of the survey were subscribers of *Government Fleet Magazine*, as well as members of two large trade associations (i.e. Association of Equipment and Management Fleet Professionals and the National Conference of State Fleet Administrators). Since the combination of the subscribers and members who belong to these magazines and organizations constituted the largest and most representative group of managers who purchase biodiesel in the United States, the results from this sample can be inferred to the larger population of management professionals who purchase biodiesel. As shown in Table 3**,** all respondents have positions which directly pertain to making decisions to purchase biodiesel from various suppliers. In addition, the sample in this study is relevant to examining decision-making by buyers in the B2B market as every participant in the study identified their position in the context of B2B decision-making (see Table 3).

Final Study Measures

In order to assess the degree of reliability, Cronbach's alpha was also calculated for each of the following constructs: Buyer Intent (5 items), Diagnosticity of Information (5 items) , Rating of Attribute Importance (5 items), Rating of Perceived Risk (10 items), Rating of Strength of Corporate Argument (3 items), and Involvement in Scenario (5 items). The results of the reliability analysis (Cronbach's alpha) are reported in Table 2. A measure was considered reliable if the reliability index was at least 0.70 (Nunally, 1978). As can be seen in Table 2**,** all but one scale exhibits satisfactory reliability indexes of between 0.70 and 0.92. The scale measuring perceived risk had a reliability index of 0.664. While some authors

consider 0.6 adequate, the points fell lower than desired. Based on theoretical consideration,

perceived risk was kept in the model, but treated with caution in further analysis.

Table 2. Final Results for Purchasing Scenario Using CR argument for Quality and CSR: Cronbach's Alpha values and Factor Analyses Results

Scale	Number of Items	Sample Item	Cronbach alpha	Variance extracted in first factor
Buyer Intent	5	• Excluding all factors other than quality/CSR, which company' bio-diesel would you select? • How likely are you to buy from Indiana Bio diesel company? • How likely are you to buy from Northern Biodiesel/Inter-Mountain? • I have a good feeling about the company.	.88	40%
Diagnosticity of Information	5	• The information that was provided in the purchasing scenario was____for your evaluation. • To what extent is the attribute quality important in making your decision?	.87	63%
Rating Attribute Importance	5	• To what extent would you say that quality/CSR is relevant to your choice? • In making a final decision, how important was supplier reputation for quality/CSR in this purchase decision?	.95	67%
Rating Perceived Risk	10	The scenario had: • Very little risk 1 2 3 4 5 6 7 A great deal of risk • Very low purchase risk 1 2 3 4 5 6 7 Very high • Does not involve risk 1 2 3 4 5 6 7 Involves risk	.66	60%
Rating Strength of Corporate Argument	3	Please rate the information related to quality/CSR as: • Very weak 1 2 3 4 5 Very strong • Very convincing 1 2 3 4 5 Not very convincing • Not very powerful 1 2 3 4 5 Very powerful • Unpersuasive 1 2 3 4 5 Very persuasive • Does not have a 1 2 3 4 5 Has a major impact major impact	.82	74%
Involvement in Scenario	5	To what extent were you involved while reading the information? • Not at all involved 1 2 3 4 5 Highly involved • Not at all interested 1 2 3 4 5 Highly interested • Not at all engaged 1 2 3 4 5 Highly engaged • Not at all concerned 1 2 3 4 5 Highly concerned • Not at all attentive 1 2 3 4 5 Highly attentive	.92	76%

Appendix D also indicates that for the HRWA, HRSA, LRSA, and LRWA scales are

measuring a single univariate construct. In essence, each construct is being consistently

measured with each set of questions. According to the CFA results each item used to assess a

particular construct largely describes its meaning. This is empirically confirmed by the strong

loadings of the factors related to each variable (Tables 2).

Structural Equation Modeling Results

The structural model fit the sample data reasonably well (see Figure 3). The ratio of Chi/df was 1.29, the null hypothesis that the calculated model co-variances were equal to the sample co-variances was not rejected at the 0.05 level, the RMSEA was 0.053., and the NFI was 0.90. All, with the exception of the NFI, which was low, indicated a good fit.

Figure 3: Structural Model
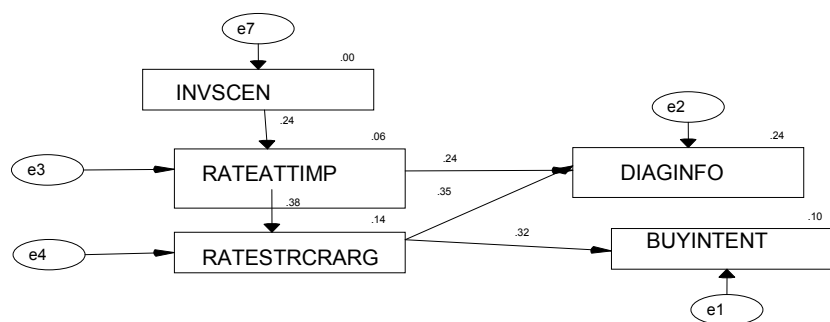
CHi sq = 6.463

DF = 5

Prob. = .264

NFI = .899

RMSEA = .053

R

A path model of Figure 2 was specified using AMOS 17.0 and the assessment of the hypothesized relationships between variables was conducted. Factor scores created from the scale items were used so that the measures were the common variance from the scale items. Figure 3 represents the final resultant path model after the analysis using AMOS 17.0 which includes interrelationships amongst the variables including perceived risk, diagnosticity of information, rating of attribute strength, rating of corporate reputation argument, involvement in scenario and buyer intent. The model depicts the interrelationships among the variables and specifies the significance of these interrelationships. The standardized co-efficients are reported in Table 8**.**

All estimates are positive. Overall, all the factors in the model accounted for 10% of the variation in buyer intent. The values on the paths are standardized coefficients, and the numbers above the variables, represented by boxes, are the R2 values. The two experimental conditions had no impact and were dropped from the model. In addition, perceived risk had no correlation and was dropped from the model. It appears that the dimension of quality or CSR in corporate reputation was not perceived as more diagnostic when perceived risk of a product purchase is high as opposed to low.

Respondents who scored high on the dimension of Rating of Strength of Attribute Importance also responded highly on Buyer Intent (r=.32). This finding contrasts with the non-existent separate effects of the CR attribute of quality and CSR attributes on buyer intent. The attributes from the two experimental conditions were dropped from the model.

The regression coefficients also show positive relationships between involvement in scenario and Rating of Attribute Importance (r=.24). In particular, the Rating of Attribute importance indirectly effects buyer intent through rating of strength of CR argument (r=.38). Rating of Strength of CR argument, on the other-hand, directly effects purchasing managers intent to buy (r=.32). Involvement in Scenario (r=.24) and Diagnosticity of Information (r=.24 and r=.35) indirectly impacts respondents' decision to buy. Involvement in the scenario is related to all these other factors and mediates the Rating of Attribute Importance.

Structural Equation Modeling Results for Each Hypothesis

Given valid and reliable measures, as well as measurement and structural models with satisfactory fit, the postulated hypotheses can be tested. This section reports the statistical results, one hypothesis at a time, with the subsequent section discussing broader themes

emerging out of the model. To test Hypothesis 1-4, the path model tested the relationships between the purchase scenario, perceived risk (high versus low) and corporate reputation (strong versus weak).

H1: In conditions of high as opposed to low perceived risk, more favorable industrial service and product evaluations are obtained in response to strong versus weak arguments about the corporate reputation attribute of quality.

The first hypotheses states that in conditions of high as opposed to low perceived risk, more favorable industrial service and product evaluations are obtained in response to strong versus weak arguments about the corporate reputation attribute of quality. Since the results show that the perceived risk variable was dropped off the model, it has no effect on product evaluations in conditions of high risk with a strong argument for the CR attribute of quality. The results indicated that perceived risk did not have a significant effect on buyer behavior, therefore the distinction between high and low perceived risk was not a factor influencing buyer behavior in conditions of strong or weak CR arguments for quality. In addition, irrespective of the risk characteristics the attribute of quality was shown not to have an influence on buyer evaluations. The results were contrary to what was originally anticipated. Possible explanations for this outcome could be that all the suppliers have provided acceptable quality products and for this reason they are more concerned about price. In addition, they may assume that there is a minimum standard of quality that all suppliers adhere to perhaps as a result of government regulation and therefore they assume that the product that is supplied will meet their minimum standards of quality. In this type of purchasing environment, the

buyer did not place too much importance on the corporate reputation rankings for quality since he assumes that the product he receives will be acceptable regardless of whom the supplier is.

In addition, the distinction between the high risk and low risk scenarios was shown not to be a significant factor in the decision making process. A possible explanation for this result is that their prior experience in using biodiesel was such that in comparison to diesel, they perceived biodiesel to be a safe and reliable alternative. The risks associated with purchasing biodiesel could be more economic, rather than technical in nature. Economic risk factors might include value for money, budgetary constraints, and unexpected shifts in the price of biodiesel. A study the effect of corporate reputation on perceived risk in an economic context may be a productive avenue of future research.

H2: Increased importance of the corporate reputation attribute quality (i.e. RATEATT) will lead to heightened considerations of the diagnosticity of quality (i.e. DIAGINFO).

It was hypothesized in the second hypothesis that increased importance of the corporate reputation attribute quality (i.e. RATEATT) would lead to heightened considerations of the diagnosticity of quality (i.e. DIAGINFO). The results show that H2 is not supported by the results. In this study, no linkage was found between the rating of attribute importance for quality and diagnosticity of information. However, when taking the rating of attribute importance for quality and CSR, there is a linkage with diagonisticity of information (see Table 8). Respondents who thought the information was diagnostic (DIAGINFO) also thought the attribute was important (RATSTRARG) (r=.24, standard error = .097, t-value=2.484, *p*=.013). This finding was reinforced by respondents who thought that

the information was diagnostic (DIAGINFO) also rated the corporate reputation argument for either quality or CSR more strongly (RATSTRCR) (r =.346; standard error=.097; t-value=3.573; *p*=.000) (see Table 8). It is reasonable to expect this result because if the participants consider the attributes of quality and CSR to be important it follows that they are more likely to incorporate them into their decision-making process. The positive relationship between the rating of attribute importance and diagnosticity of information is consistent with previous results (eg. Gunra-Cahli, 2007). In light of the fact that they are important taken together, it is difficult to explain why each attribute analyzed individually does not have a significant relationship to diagnosticity of information. It is recommended that future studies be conducted to either confirm or refute these findings.

H3: Evaluations will not vary as a function of perceived risk when subjects are exposed to corporate arguments about CSR as prior experimental research has shown CSR perception is not considered diagnostic for evaluations of functional attributes (Sen and Bhattacharya, 2001).

H3 suggested that evaluations will not vary as a function of perceived risk when subjects are exposed to corporate arguments about CSR. As shown in Table 8, this hypothesis was not supported. In addition, the attribute of CSR from this experimental condition was dropped from the model since there were no positive standardized path estimates between the CR argument for CSR and buyer intent. Both the CR argument for CSR and perceived risk were dropped from the model and therefore this hypothesis no longer remains viable or meaningful. In this study, since perceived risk did not have any relation to any of the variables, it would be impossible to observe the differential impact of CSR information on buyer intent. This is further supported by the finding that CSR was shown to have no relation to buyer intent. A

possible reason for this finding is that corporate and municipal purchasing managers place relatively little weight on CSR relative to other factors in their decision-making.

H4: Arguments in support of the dimensions of corporate social responsibility in corporate reputation are perceived as more diagnostic when perceived risk of a product purchase is high as opposed to low.

H4 suggested that arguments in support of the dimensions of corporate social responsibility in corporate reputation are perceived as more diagnostic when perceived risk of a product purchase is high as opposed to low. This hypothesis is not supported because there is no link between perceived risk and any other variable in the model (see Figure 3). Respondents did not report a greater reliance in the use of CSR information in purchase situations which involved a high level of perceived risk and a strong CR argument for CSR. This hypothesis is not supported for reasons identical to those described for hypothesis 1 and 3, namely that perceived risk and CSR were not shown to have any relationship to anything else.

Other findings

While it was expected that the major predictors of buyer intent are the corporate reputation attributes of either quality in high risk contexts, with rating of attribute importance and rating of corporate reputation argument for quality as the major contributor, this did not prove to be the case. This is inconsistent with the finding that the strength of corporate reputation argument for quality was the key indicator in the Gurhan-Canli et al. study (2002).

The relationships between constructs which were statistically significant are listed in (Tables 7 – 9). The most significant finding from the resultant path model is that the fit

indices show that this is a model which accounts for nearly 10% of the variance in the dependent variable buyer intent.

Other interesting interrelationships are significant. As shown in Table 8, there are several relationships between constructs which are supported as indicated by the five path coefficients which are significant at the 0.05 level. The squared multiple correlations (R2) of the endogenous latent factors, as well as their structural error terms, are summarized in Table 8.

The most significant finding from the resultant path model is that rating of attribute strength explains nearly 38% of the variability in rating of strength of corporate reputation argument. In addition, rating of strength of corporate reputation argument accounts for 31.8% of the variability in buyer intent. This finding compares favorably to Gurhan and Canli's model. Rating of strength of corporate reputation attribute was moderately correlated with diagnosticity of information (r = 0.346) which indicates a moderately strong connection between them. There is also a relationship between involvement in scenario and rating of strength of attribute (r = .237).

CHAPTER V

SUMMARY AND CONCLUSIONS

Overview

Chapter 5 presents a discussion of the results, as well as the implications of the findings. This chapter will discuss the theoretical and managerial implications of the study relating to B2B decision-making in high risk purchasing situations. Finally, Chapter 5 also lists the contributions, notes the limitations of this research and concludes with the research extensions.

Discussion of the Results

In this study, the literature on perceived risk was examined and the concept of information related to corporate reputation mitigating the impact of perceived risk on buyer intent was introduced. Building upon the literature studied, expert opinion, interviews and a pilot survey, a measurement instrument for perceived risk and corporate reputation was developed. The sample consisted of an actual group of purchasing managers (n=102) of biodiesel for municipal and commercial fleet vehicles. While the study was not able to link perceived risk to any of the variables in the model, the study found, that together the CR-attributes for quality and CSR accounted for 10% of the variance in buyer intent. These findings corroborate previous findings (eg. Blomback and Axelsson, 2007; Carmeli and Tishler, 2005). This indicates that for the supplier reputation-building is important.

Concerning the lack of significance of the perceived risk variable, our results demonstrate that risk-perception does not necessarily encourage the use of CR attributes in B2B settings. These findings are not in line with consumer studies of perceived risk which demonstrate that risk-perception leads to increased information seeking (e.g. Gunra-Cahli , 2007). A plausible explanation for this rather contrasting finding is that the vast majority of the buyers in the samples used in these studies did not have much prior experience purchasing the products at hand (eg. College students making the decision to purchase an HDTV). The sample in this study, on the other hand, reported having medium to high level of knowledge about the product (76%) and a mean of 6 years of experience purchasing biodiesel. According to prior research, perceived risk is most likely to be a determinant of purchase intent in cases where there is overall lack of knowledge about the product (Anderson *et. al,* 1987; Beatty *et. al.,* 1987; Coleman *et. al*, 1995; Cowley *et. al*, 2003). For example, many buyers in this study may have been able to refer to their own studies and experiences which contradict the statement that biodiesel is 40% more likely to cause engine damage in the high perceived risk scenario. For this reason, the study participants may not have been able to differentiate between high and lower levels of risk as was intended by the conditions in the scenarios that were presented to them.

The lack of perceived risk in this study tends to reinforce Gemunden's (1985) explanation for the failure of 51% of all studies he examined (over 100) to show a relationship between risk and information-search. Gemunden hypothesized that low-involvement tasks do not induce enough motivation to search for information, if the perceived risk remains below a critical threshold of tolerated *risk*. The fact that the professionals were so experienced and

knowledgeable, may have offset the sense of risk and uncertainty usually associated with purchasing a new and technically complex product such as biodiesel.

While situational involvement may be a necessary antecedent condition for the perceived risk-information search link to exist (Gemunden, 1985), this study shows that even in cases of substantial situational involvement, the fact that purchasing managers are sufficiently knowledgeable and experienced may be an alternate or additional factor in explaining why they do not perceive any risk. It is conceivable, however, that perceived risk in this study may have manifested itself in a different manner. Within consumer psychology, situational involvement and perceived risk are viewed to be motivational constructs, influencing subsequent consumer behaviors such as information search and dissemination, as well as extensiveness of the decision-making process (Dholakia, 2001; Laurent and Kapferer, 1985). As situational involvement is a necessary condition for the experience and evaluation of risk (Bloch and Richins, 1983; Celsi and Olson, 1988; Laurent and Kapferer, 1985), and the two constructs of situational involvement and involvement in scenario are closely related, it is possible that risk was a factor in this study but manifested itself in the form of involvement of scenario which is closely related to the construct of situational involvement. Involvement in scenario was a significant factor in this study and a finding which lends support to the presence of perceived risk. Future research should further explore an understanding of the causal linkages between the various dimensions of involvement and risk.

In this study, subjects were exposed to a purchasing scenario in which they had to choose between two suppliers of biodiesel based on ratings of the companies by corporate reputation. Although each of the two CR variables (i.e. quality and CSR) by itself do not contribute to buyer intent, when analyzed together they account for 10% of the variation in

buyer intent. This finding indicates that the usefulness of corporate reputation may be limited. In B2B purchasing, supplier bids are evaluated based on price and they must meet the details, requirements, terms and conditions of government regulations. Many buyers have constructed bids in such a manner that there are very specific performance points that are measured and used to evaluate their performance. Therefore, the corporate reputation of a firm or its rating by any industry association may be a minimal factor in public procurement. All things being equal, other factors such as price, delivery costs, product distribution, location, lubricity, the feedstock used to produce the product (eg. soy, animal fat, etc.), freeze protection and engine/fuel warranty claims will be the predominant factors in the purchasing decision, and not the company's rating of the biodiesel supplier. Buyers' evaluations could have been influenced more strongly by other factors which may take priority over the CR of the biodiesel supplier.

Contributions

This research has made a number of contributions to the existing body of knowledge related to B2B purchasing decision-making. First, the concept of corporate reputation information having an impact on risk was introduced. This concept will add to the discussion of how and to what extent risk-perception affects buyer purchase behavior, and the role that corporate reputation plays in mitigating the perception of risk. It is hoped that the findings of the study will encourage further understanding of the complex nature of risk-perception in B2B purchasing behavior, and its interaction with customer perceptions of corporate reputation in these contexts.

Second, a reliable, valid and interesting method of collecting data was presented. Particularly noteworthy is the use of scales done in conjunction with a scenario-based method

of data collection. This study provides a refined measurement scale for six constructs crucial to the investigation of industrial buyer behavior in relation to perceived risk and corporate reputation with the scale for the buyer intent construct, which received the highest reliability values. Since corporate reputation and perceived risk have been and continue to be, an important issue in purchasing, the establishment of this scale should prove to be especially valuable in future studies examining purchasing decision. Researchers are encouraged to apply this instrument to their own research.

Third, we empirically explored the relationships between risk, CR attributes of quality and CSR and intent to purchase biodiesel. This was the first effort to extend the Dowling and Staelin Model (1994) into a B2B context. Based on this model, a research model was developed which constitutes the first known framework of industrial buyer behavior in relation to the study of risk-perception and corporate reputation in B2B settings. This model provides a structure and guidance for the future study of not only perceived risk, but also of corporate reputation attributes and their impact on buyer intent. In addition, since empirical studies related to measuring the effect of risk perception have mostly been for consumers' attitude towards purchasing, our findings provide another way to understand the effect of risk but in the context of B2B purchasing.

Limitations

Our research has been subject to certain limitations. An important limitation of this study is the small sample size (n=102) which was less than recommended for running structural equation modeling. A larger sample size would have lead to more reliable conclusions. Due to the extremely low response rate of 1%, a less than optimal sample size was used.

In addition, since the vast majority of the sample consisted of primarily experienced buyers the results of the study are biased towards experienced rather than first-time buyers. Consequently, established expectations concerning the role of the suppliers reputation in the context of risk is weaker when buyers engage in purchase situations they already have a lot of experience in.

Another limitation of the research includes the fact that multiple sources of data collection were used, a fully matched profile of respondents for each condition was not obtained. The selection of a sample where respondents from the two conditions have a matched profile might lead to a more valid comparison of the results across conditions. In addition, due to the fact that our results are directly relevant only to one target group, biodiesel purchasing managers of municipal and commercial fleets, and to one specific product, biodiesel, generalizations of the findings beyond the immediate population observed should be taken with caution. Furthermore, purchasing managers' behaviors, cognitions and perceptions themselves were not measured, but rather were inferred from the characteristics of the hypothetical scenario.

<u>Managerial Implications</u>

In practice, it is important to realize that buyer purchase behavior is the outcome of a mixture of decision-making processes, each of them being affected by a large number of factors. Since corporate reputation was found to have a direct and positive effect on purchasing managers, these findings imply that suppliers are likely to benefit from a corporate reputation which conveys quality and CSR. It is recommended, therefore, that B2B companies should carefully select the attributes they choose to use and use these attributes to endorse and promote their products as well as their reputation.

Businesses should also identify how purchasing managers of different levels of experience and knowledge might react differently to certain corporate reputation attributes. With the knowledge of the buyer's risk perception, suppliers are able to infer buyer behavior, before solicitations are even sent out, and thus market their products more effectively. Marketers are called on to tailor their corporate reputation strategies to fit each type of purchasing manager. For example, marketers should further stress quality or CSR in markets where these factors are highly considered.

Suggestions for Research Extensions

More empirical research is needed to address and validate the relative impact of perceived risk and corporate reputation attributes on buyer intent in B2B settings. Future studies should look at the effect of other CR attributes such as trust and innovation in relation to perceived risk. The testing of connections between the variables in other B2B environments, especially the comparison of different product types, is recommended.

Although the high risk condition was set up to induce high perceived risk, in actuality the mean scores in these situations reflected low levels of perceived risk in the purchasing decision. Since perceived risk has been shown to be a primary moderator of information search and buyer intent, in order to improve the rating of perceived risk which is supposed to moderate the relationship between ratings of CR attribute importance, it is suggested that future researchers concentrate on increasing levels of perceived risk in their hypothetical scenarios.

The findings also indicate that the perceived product category risk needs to be measured beforehand relative to other types of products to see that it is in fact triggering a perception of risk. It is likely that the absence of risk perceived in the product category of biodiesel can

explain the non-significant findings. It would be interesting to compare product category perceived risk in the B2B market to find out which product category has greater risk-perception, and then based on this information, to find out CR information can mitigate the risk.

For more insight into the relevance of the influence of corporate reputation attributes on buyer evaluations as a function of risk, it would be interesting to include other relevant attributes such as tradition, innovation, quality of management, as well as attributes such as quality of products, value for money, corporate success, commitment for charitable and social issues, qualification of management, and credibility of advertising claims which are unique to social responsibility environmental protection. This is especially important since so many B2B companies promote these attributes at their websites.

Summary and Conclusions

At least two conclusions can be drawn from our research. First, corporate reputation arguments related to quality and CSR accounts for a 10% proportion of the intent to purchase biodiesel. This finding contributes to the research on CR in B2B markets. Second, perceived risk does not necessarily always affect buyer intent in B2B purchasing decisions. These findings have implications for both practice and research.

Table 6: *Which of the following best describes this particular purchase?*

	Frequency	Percent
This was a newly negotiated long-term contract	20	26%
This was a renewal of a previously negotiated long-term contract	57	74%
	77	100%

Table 7. Resultant path model from the analysis of data.

Regression Weights: (Group number 1 - Default model)

		Path between constructs	Parameter Estimates	S.E.	*t*-value.	P
RATEATT	<---	INVENSC	.237	.097	2.447	.014
RATSTRARG	<---	RATEATT	.382	.093	4.084	***
DIAGINFO	<---	RATEATT	.242	.097	2.484	.013
BUYINTENT	<---	RATSTRARG	.318	.096	3.301	***
DIAGINFO	<---	RATSTRARG	.346	.097	3.573	***

Table 8. Standardized Regression Weights: (Group number 1 - Default model)

	Estimate
RATEATT <--- INVENSC	.238
RATSTRARG <--- RATEATT	.381
DIAGINFO <--- RATEATT	.241
BUYINTENT <--- RATSTRARG	.318
DIAGINFO <--- RATSTRARG	.346

Table 9. Squared Multiple Correlations

	Estimate
INVENSC	.000
RATEATT	.057
RATSTRARG	.145
DIAGINFO	.242
BUYINTENT	.101

APPENDIX A

DEMOGRAPHIC INFORMATION

Section I: Demographic Information
Biodiesel Purchasing Questionnaire

I am conducting academic research for a class on the marketing of bio-diesel. I would be greatly appreciative if you could take a few minutes to share your thoughts.

Section I: Demographic Information
Directions: Please complete the following demographic information before completing Section II.

1. What percent of your fuel mix is comprised of bio-diesel?
    - _____None
    - _____ Below 5%
    - _____ 5% > 10%
    - _____ 10% > 20%
    - _____ 20% > 30%
    - _____ 30% > 40%
    - _____ 40% > 50%
    - _____ Above 50%

2. What type of biodiesel does your organization generally buy? _____B5_____B20_____B100
3. Number of years of biodiesel use in your municipal fleet: _____
4. How many vehicles does your organization manage in your fleet? _____
5. Which types of vehicles are fueled by biodiesel in your municipal fleet? _____ sanitation vehicles_____ buses_____ truck s_____ fire engines_____ cars/SUVs/motorcycles/scooters_____ boats (e.g. Ferries, fire boats, police boats) _____ Other vehicle types
6. How many gallons did your organization buy last year? _____ gallons
7. How much did your department spend on bio-diesel? _____ dollars
8. From which supplier firms did you buy your bio-diesel? _____
9. Has your company bought from this supplier previously? Yes_____No_____
10. If yes, how long have you been buying form the chosen supplier?_____(Years)
11. Was this purchase: made from one supplier _____spread among several suppliers?_____
12. Was there a competitive bidding process used for this specific purchase? Yes_____No_____
13. Which of the following best describes this particular purchase?
    - _____This was a newly negotiated long-term contract.
    - _____This was a renewal of a previously negotiated long-term contract.
    - _____A long-term contract was considered as a possibility, but rejected
    - _____A long-term contract was not appropriate in this situation
    - _____Other reasons
14. Beyond the current suppliers, what additional suppliers are you aware of?

Organizational Demographics
15. How many people work in your organization? _____
16. How many years of experience do you have purchasing biodiesel for your fleet? ____
17. How would you describe your level of biodiesel purchasing knowledge (check one)
     High_____ Medium_____ Low_____
18. If anyone, who else is involved in the decision-making process of purchasing bio-diesel?

Respondent Demographics
19. Current position: _____ Years in current position:_____
20. Gender: Male _____ Female_____
21. Ethnicity: White _____ African-American_____Hispanic _____
     Asian _____Native-American _____Other _____

APPENDIX B

FINAL SURVEY INSTRUMENTS

Experiment 1: Scenario for Condition 1: High Risk, Strong Argument for Quality

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has a 40% greater chance of causing damage to the engine in comparison to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel and offers reduced C02 emissions (adapted from *the American Biodiesel Fuel Association*, 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications required:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc. Biodiesel Company
Biodiesel Quality		
Company reputation for quality: To assess company reputation for quality, 3 references rated the company for quality on a scale of 1-10, with 1=poor reputation for quality and 10= excellent reputation for quality. *Minimum rating by references of 8.0 required.	8.81	3.65
Compliance and certification with the American Society of Testing and Materials (ASTM) * Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.*	Yes	Yes
Feedstock *Soybean oil.*	Yes	Yes
Delivery *Reliable, on-time delivery*	Yes	Yes
Volume *Able to produce the volume requested (bbls)*	Yes	Yes

In terms of corporate reputation rankings of the major biodiesel companies, the *American Biodiesel Fuel Association* presented the latest results of its annual "Most Admired Biodiesel Companies Company Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The *American Biodiesel Fuel Association* surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for quality. Northern States Biodiesel Company ranks the highest in the corporate reputation survey for quality. The results for the biodiesel industry are as follows (reputation for quality, where 10 = "most admired"):

1. Northern States Biodiesel Company= 8.81
2. Paradise Valley Biofuels= 8.43
3. QCC Biodiesel= 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Inter-Mountain Biodiesel, Inc., Inc. = 3.65

Experiment 1; Scenario for Condition 2: High Risk, Weak Argument for Quality

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has a 40% greater chance of causing damage to the engine in comparison to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel and offers reduced C02 emissions (adapted from the *American Biodiesel Fuel Association*, 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications required:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc. BiodieselCompany
Biodiesel Quality		
Company reputation for quality: To assess company reputation for quality, 3 references rated the company for quality on a scale of 1-10, with 1=poor reputation for quality and 10= excellent reputation for quality. *Minimum rating by references of 8.0 required.	3.65	8.81
Compliance and certification with the American Society of Testing and Materials (ASTM) * Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.*	Yes	Yes
Feedstock *Soybean oil.*	Yes	Yes
Delivery *Reliable, on-time delivery*	Yes	Yes
Volume *Able to produce the volume requested (bbls)*	Yes	Yes

In terms of corporate reputation rankings of the major biodiesel companies, the *American Biodiesel Fuel Association* presented the latest results of its annual "Most Admired Biodiesel Companies Company Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The *American Biodiesel Fuel Association* surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for quality. Northern States Biodiesel Company ranks the lowest in the corporate reputation survey for quality. The results for the biodiesel industry are as follows (reputation for quality, where 10 = "most admired"):

1. Inter-Mountain Biodiesel, Inc., Inc. = 8.81
2. Paradise Valley Biofuels= 8.43
3. QCC Biodiesel = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Northern States Biodiesel Company= 3.65

Experiment 1; Scenario for Condition 3: Low Risk, Strong Argument for Quality

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO_2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has the same chance of causing damage to the engine as compared to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel and offers reduced C02 emissions (adapted from the *American Biodiesel Fuel Association,* 2008, 54-58).

The following table lists the supplier proposals in terms of the contract specifications required:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc. Biodiesel Company
Biodiesel Quality		
Company reputation for quality: To assess company reputation for quality, 3 references rated the company for quality on a scale of 1-10, with 1=poor reputation for quality and 10= excellent reputation for quality. *Minimum rating by references of 8.0 required.	8.81	3.65
Compliance and certification with the American Society of Testing and Materials (ASTM) * Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.*	Yes	Yes
Feedstock *Soybean oil.*	Yes	Yes
Delivery *Reliable, on-time delivery*	Yes	Yes
Volume *Able to produce the volume requested (bbls)*	Yes	Yes

In terms of corporate reputation rankings of the major biodiesel companies, *the American Biodiesel Fuel Association* presented the latest results of its annual "Most Admired Biodiesel Companies Company Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The *American Biodiesel Fuel Association* surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for quality. Northern States Biodiesel Company ranks the highest in the corporate reputation survey for quality. The results for the biodiesel industry are as follows (reputation for quality, where 10 = "most admired"):

1. Northern States Biodiesel Company= 8.81
2. Paradise Valley Biofuels= 8.43
3. QCC Biodiesel = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Inter-Mountain Biodiesel, Inc., Inc. = 3.65

Experiment 1; Scenario for Condition 4: Low Risk, Weak Argument for Quality

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO_2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has the same chance of causing damage to the engine in comparison to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel and offers reduced C02 emissions (adapted from the *American Biodiesel Fuel Association* 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications required:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc. Biodiesel Company
Biodiesel Quality		
Company reputation for quality: To assess company reputation for quality, 3 references rated the company for quality on a scale of 1-10, with 1=poor reputation for quality and 10= excellent reputation for quality. *Minimum rating by references of 8.0 required.	3.65	8.81
Compliance and certification with the American Society of Testing and Materials (ASTM) * Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties **Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.*	Yes	Yes
***Feedstock** *Soybean oil.*	Yes	Yes
Delivery **Reliable, on-time delivery*	Yes	Yes
***Volume** *Able to produce the volume requested (bbls)*	Yes	Yes

In terms of corporate reputation rankings of the major biodiesel companies, the *American Biodiesel Fuel Association* presented the latest results of its annual "Most Admired Biodiesel companies Company Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The *American Biodiesel Fuel Association* surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for quality. Northern States Biodiesel Company ranks the lowest in the corporate reputation survey for quality. The results for the biodiesel industry are as follows (reputation for quality, where 10 = "most admired"):

1. Inter-Mountain Biodiesel, Inc., Inc. = 8.81
2. Paradise Valley Biofuels= 8.43
3. QCC Biodiesel = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Northern States Biodiesel Company= 3.65

Experiment 2; Scenario for Condition 5: High Risk, Strong Argument for CSR

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *National Biodiesel Board* tested this biodiesel and compared it to regular diesel, they found that biodiesel has a 40% greater chance of causing damage to the engine as expected as compared to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel and offers reduced CO2 emissions (adapted from the *American Biodiesel Fuel Association,* 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc.
Biodiesel Corporate Reputation for Corporate Social Responsibility: To assess company reputation for CSR, references rated the company for CSR, on a scale of 1-10, with 1 = poor reputation for CSR and 10 = excellent reputation for CSR. The rated CSR items are listed below:	Composite score: 8.73	Composite score: 4.33
CSR Item 1: The biodiesel manufacturer declares commitment to keeping the earth green and positively protecting the environment.	8.9	4.5
CSR Item 2: The company regards the protection of the earth to be one of its most important management issues and is continually developing its corporate approach to preserve the environment for later generations.	8.1	3.9
Compliance and certification with the American Society of Testing and Materials (ASTM) *Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.*	Yes	Yes
*Feedstock *Soybean oil.*	Yes	Yes
*Delivery *Reliable, on-time delivery*	Yes	Yes
*Volume *Able to produce the volume requested (bbls)*	Yes	Yes

Corporate Reputation Rankings for Corporate Social Responsibility:
In terms of corporate reputation rankings of the major biodiesel companies, the *National BiodieselBoard*, presented the latest results of its annual "Most Admired Biodiesel companies Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The latest *American Biodiesel Fuel Association* surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for corporate social responsibility. Northern States Biodiesel Company ranks the highest in the corporate reputation survey for corporate social responsibility. The results for the biodiesel industry are as follows (reputation for corporate social responsibility, where 10= "most admired").
1. Northern States Biodiesel Company= 8.73
2. Paradise Valley Biofuels= 8.43
3. Fumpa Bio-fuels = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Inter-Mountain Biodiesel, Inc. = 4.33

Experiment 2; Scenario for Condition 6: High Risk, Weak Argument for CSR

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO_2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has a 40% greater chance of causing damage to the engine as expected as compared to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel production and offer reduced CO_2 emissions (adapted from the *American Biodiesel Fuel Association*, 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc.
Biodiesel Corporate Reputation **for Corporate Social Responsibility:** To assess company reputation for CSR, references rated the company for CSR, on a scale of 1-10, with 1 = poor reputation for CSR and 10 = excellent reputation for CSR. The rated CSR items are listed below:	Composite score: 4.33	Composite score: 8.73
CSR Item 1: The biodiesel manufacturer declares commitment to keeping the earth green and positively protecting the environment.	4.5	8.9
CSR Item 2: The company regards the protection of the earth to be one of its most important management issues and is continually developing its corporate approach to preserve the environment for later generations.	3.9	8.1
Compliance and certification with the American Society of Testing and Materials (ASTM) *Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.	Yes	Yes
Feedstock *Soybean oil.	Yes	Yes
Delivery *Reliable, on-time delivery	Yes	Yes
Volume *Able to produce the volume requested (bbls)	Yes	Yes

Corporate Reputation Rankings for Corporate Social Responsibility:
In terms of corporate reputation rankings of the major biodiesel companies, the *American Biodiesel Fuel Association* presented the latest results of its annual "Most Admired Biodiesel Companies Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The latest National Biodiesel Board surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for corporate social responsibility. Northern States Biodiesel Company ranks the lowest in the corporate reputation survey for corporate social responsibility. The results for the biodiesel industry are as follows (reputation for corporate social responsibility, where 10= "most admired").
1. Inter-Mountain Biodiesel, Inc. = 8.73
2. Paradise Valley Biofuels= 8.43
3. Fumpa Bio-fuels = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Northern States Biodiesel Company= 4.33

Experiment 2; Scenario for Condition 7: Low Risk, Strong Argument for CSR

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO_2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has the same chance of causing damage to the engine as compared to regular diesel.. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel and offers reduced CO_2 emissions (adapted from the *American Biodiesel Fuel Association,* 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc.
Biodiesel Corporate Reputation for Corporate Social Responsibility: To assess company reputation for CSR, references rated the company for CSR, on a scale of 1-10, with 1 = poor reputation for CSR and 10 = excellent reputation for CSR. The rated CSR items are listed below:	Composite score: 8.73	Composite score: 4.33
CSR Item 1: The biodiesel manufacturer declares commitment to keeping the earth green and positively protecting the environment.	8.9	4.5
CSR Item 2: The company regards the protection of the earth to be one of its most important management issues and is continually developing its corporate approach to preserve the environment for later generations.	8.1	3.9
Compliance and certification with the American Society of Testing and Materials (ASTM) *Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.	Yes	Yes
*Feedstock *Soybean oil.*	Yes	Yes
*Delivery *Reliable, on-time delivery*	Yes	Yes
*Volume *Able to produce the volume requested (bbls)*	Yes	Yes

Corporate Reputation Rankings for Corporate Social Responsibility:
In terms of corporate reputation rankings of the major biodiesel companies, the *American Biodiesel Fuel Association,* presented the latest results of its annual "Most Admired Biodiesel companies Reputation Survey" (pp. 75 82) in its March 4, 2008 edition. The latest *American Biodiesel Fuel Association* surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for corporate social responsibility. Northern States Biodiesel Company ranks the highest in the corporate reputation survey for corporate social responsibility. The results for the biodiesel industry are as follows (reputation for corporate social responsibility, where 10= "most admired").
1. Northern States Biodiesel Company= 8.73
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3. Fumpa Bio-fuels = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Inter-Mountain Biodiesel, Inc. = 4.33

Experiment 2; Scenario for Condition 8: Low Risk, Weak Argument for CSR

Biodiesel is viewed as a significant alternative source of energy as it emits far less carbon dioxide (CO_2) emissions than is the case with regular diesel. Moreover, it has a growing share of the municipal fuel mix. However, when the *American Biodiesel Fuel Association* tested this biodiesel and compared it to regular diesel, they found that biodiesel has the same chance of causing damage to the engine as compared to regular diesel. The Northern States Biodiesel Company and Inter-Mountain Biodiesel, Inc. are two biodiesel manufacturers whose biodiesel products were tested. Both companies produce B20 type biodiesel which covers all the specifications required for biodiesel production and offer reduced CO_2 emissions (adapted from the *American Biodiesel Fuel Association,* 2008, 54-58). The following table lists the supplier proposals in terms of the contract specifications:

Feature	Northern States Biodiesel Company	Inter-Mountain Biodiesel, Inc.
BiodieselCorporate Reputation for Corporate Social Responsibility: To assess company reputation for CSR, references rated the company for CSR, on a scale of 1-10, with 1 = poor reputation for CSR and 10 = excellent reputation for CSR. The rated CSR items are listed below:	Composite score: 4.33	Composite score: 8.73
CSR Item 1: The biodiesel manufacturer declares commitment to keeping the earth green and positively protecting the environment.	4.5	8.9
CSR Item 2: The company regards the protection of the earth to be one of its most important management issues and is continually developing its corporate approach to preserve the environment for later generations.	3.9	8.1
Compliance and certification with the American Society of Testing and Materials (ASTM) *Achieving the ASTM standard on every batch of biodiesel is critical to protecting consumers and maintaining a reputation of biodiesel as a high quality, high performance fuel.	Yes	Yes
Has obtained BQ-9000 certification/accreditation status; a voluntary quality control standard	Yes	Yes
Cold Weather Properties *Does not start to freeze, gel or cloud between 35 degrees F and 60 degrees F that could lead to resultant clogged filters.*	Yes	Yes
*Feedstock *Soybean oil.*	Yes	Yes
*Delivery *Reliable, on-time delivery*	Yes	Yes
*Volume *Able to produce the volume requested (bbls)*	Yes	Yes

Corporate Reputation Rankings for Corporate Social Responsibility:
In terms of corporate reputation rankings of the major biodiesel companies, the *American Biodiesel Fuel Association*, presented the latest results of its annual "Most Admired Biodiesel companies Reputation Survey" (pp. 75-82) in its March 4, 2008 edition. The latest National Biodiesel Board surveyed 1000 transportation fleet buyers and asked them to rank 100 companies in the biodiesel industry for having a corporate reputation for corporate social responsibility. Northern States Biodiesel Company ranks the lowest in the corporate reputation survey for corporate social responsibility. The results for the biodiesel industry are as follows (reputation for corporate social responsibility, where 10= "most admired").

1. Inter-Mountain Biodiesel, Inc. = 8.73
2. Paradise Valley Biofuels= 8.43
3. Fumpa Bio-fuels = 6.95
4. Schuyler Biofuels Inc.= 5.35
5. Panhandle Biodiesel Corporation = 4.43
6. Northern States Biodiesel Company= 4.33

APPENDIX C

QUESTIONNAIRE

Questionnaire (40 items)

Please rate each statement on the following scale to indicate the degree to which s/he perceives an attribute to exist for the given biodiesel manufacturer. Circle the number which corresponds with your answer.

Part 1: Product Evaluations and Cognitive Responses

1. Excluding all factors other than quality, which company's biodiesel would you select?
   Northern States Biodiesel Company_____ Inter-Mountain Biodiesel, Inc. Company_____

Please rate your evaluation of the biodiesel manufacturers based on the information in their technical proposals.

2. How likely are you to buy from Northern States Biodiesel Company?   Very unlikely 1 2 3 4 5 6 7   Very likely
3. How likely are you to buy from Inter-Mountain Biodiesel, Inc.?   Very unlikely 1 2   3 4 5 6 7   Very likely

Please rate each statement on the following scale to indicate the degree to which s/he perceives an attribute to exist for the biodiesel manufacturer that you would select in this scenario. Circle the number which corresponds with your answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
4. I have a good feeling about the company which I selected.	1	2	3	4	5
5. I admire and respect the company.	1	2	3	4	5
6. I trust the company.	1	2	3	4	5
7. The biodieselsuppliers stands behinds its products and services.	1	2	3	4	5
8. The company offers high quality products and services.	1	2	3	4	5
9. The company offers products and services that are good value for the money.	1	2	3	4	5
10. Tends to outperform its competitors.	1	2	3	4	5
11. Looks like a company with strong prospects for growth.	1	2	3	4	5

Do you think the biodiesel presented in the aforementioned technical specifications is:

12. Very unfavorable	1	2	3	4	5	6	7	Very favorable
13. Very bad	1	2	3	4	5	6	7	Very good
14. Very negative	1	2	3	4	5	6	7	Very positive
15. Very weak proposal	1	2	3	4	5	6	7	Very strong proposal
16. Very unacceptable	1	2	3	4	5	6	7	Very acceptable
17. Very ambiguous	1	2	3	4	5	6	7	Very clear

18. Are there any other specifications that you would take into consideration when evaluating the biodiesel products? If so, kindly detail the additional relevant specifications?

19. **Cognitive Response:** You will be given three minutes to write down any thoughts which had occurred to you while you were reading through the information.

Part III. The following questions ask you to express your opinions on your preferred biodieselsupplier. Please circle the number that best reflects your agreement.

The information that was provided in the purchasing scenario was _____ for your evaluation:

1. Extremely Irrelevant	1	2	3	4	5	6	7	Extremely Relevant
2. No use	1	2	3	4	5	6	7	Great Use
3. Not diagnostic at all	1	2	3	4	5	6	7	Highly diagnostic
4. Not meaningful	1	2	3	4	5	6	7	Very meaningful
5. Not very persuasive	1	2	3	4	5	6	7	Very unpersuasive

To what extent is the attribute quality important in making your decision?

6. Not at all important	1	2	3	4	5	6	7	Very Important
7. Not at all significant	1	2	3	4	5	6	7	Very significant
8. Not useful	1	2	3	4	5	6	7	Very useful
9. Does not have an effect	1	2	3	4	5	6	7	Does have an effect
10. Does not have an impact	1	2	3	4	5	6	7	Does have an impact

To what extent would you consider using quality as a feature in your decision?

11. A feature I would not consider	1	2	3	4	5	6	7	A feature I would definitely consider

To what extent would you say that quality is relevant to your choice?

12. Irrelevant	1	2	3	4	5	6	7	Very relevant to my choice

In making a final decision, how important was supplier reputation for quality in this purchase decision?

13. Not important	1	2	3	4	5	6	7	Very important

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
14. **Indiana Biodiesel is a leader in quality**	1	2	3	4	5
15. **Inter-Mountain Biodiesel, Inc. is a leader quality.**	1	2	3	4	5

16. **To what degree does Indiana Biodiesel have quality**	No quality 1	2	3	4	5	Very high quality
17. **To what degree does Inter-Mountain Biodiesel, Inc. have quality**	No quality 1	2	3	4	5	Very high quality

The scenario had:

18. Very little risk	1	2	3	4	5	6	7	A great deal of risk
19. Very low purchase risk	1	2	3	4	5	6	7	Very high purchase risk
20. Does not involve risk	1	2	3	4	5	6	7	Involves risk
21. Very dangerous	1	2	3	4	5	6	7	Not very dangerous
22. Has potential negative consequences	1	2	3	4	5	6	7	Does not have potential negative consequences

Please indicate the level of agreement with the following statements:

		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23.	There was a great deal of uncertainty surrounding this purchase.	1	2	3	4	5
24.	We had all the information that we needed to make the purchase decision.	1	2	3	4	5
25.	The decision to purchase biodieselinvolves high risk.	1 2		3	4	5
26.	Biodiesel has the same chance as diesel of causing damage to the engine.	1 2		3	4	5
27.	The likelihood of biodieselperforming as expected is significantly lower that the likelihood of diesel.	1	2	3	4	5

Please rate the information related to quality as:

28.	Very weak	1	2	3	4	5	Very strong
29.	Very convincing	1	2	3	4	5	Not very convincing
30.	Not very powerful	1	2	3	4	5	Very powerful
31.	Unpersuasive	1	2	3	4	5	Very persuasive
32.	Does not have a major impact	1	2	3	4	5	Has a major impact
33.	Not very influential	1	2	3	4	5	Very influential
34.	Not at all credible	1	2	3	4	5	Totally credible
35.	Does not inspire confidence	1	2	3	4	5	Inspires confidence

To what extent were you involved while reading the information?

36.	Not at all involved	1	2	3	4	5	Highly involved
37.	Not at all interested	1	2	3	4	5	Highly interested
38.	Not at all engaged	1	2	3	4	5	Highly engaged
39.	Not at all concerned	1	2	3	4	5	Highly concerned
40.	Not at all attentive	1	2	3	4	5	Highly attentive

Thank you for your participation.

APPENDIX D

CONSTRUCT MEASUREMENT ITEMS TO BE MEASURED BY PILOT STUDY

Construct measurement items to be tested in the Pilot Study
(Please see attached document.)

APPENDIX E

PROPOSAL FOR CONDUCTING
ACADEMIC RESEARCH TO TRADE ASSOCIATIONS

Proposal for conducting academic research to trade associations

Dear (Trade Association),

My name is Angela Pouakidas and I am a doctoral student at Nova Southeastern University's Huizenga School of Business. I am currently conducting research related to the purchase of biodiesel by transportation fleet managers. I am interested in becoming a member of your organization as I feel that membership would provide a direct benefit to my research. If you have student membership, I would be interested in applying for that type of membership.

My research involves a survey which would be completed by transportation fleet managers who purchase biodiesel. I am wondering if it would be possible for your organization to email my survey to your members. It is likely that more fleet managers would be willing to participate in the study if your organization is the originator of the request. In addition, my not being directly involved would preserve the anonymity of the respondents which is an essential requirement in doing academic research.

To reciprocate, I would be willing to share demographic information pertaining to the purchase of biodiesel by transportation managers with your organization. This is information which may provide your organization with a better understanding of your membership thereby enabling you to better serve them. Furthermore, my research may dovetail with any research being conducted by your organization. In addition, the results I obtain may also prove to be of interest to you and your members.

For your reference, I have emailed the survey to you via Surveymonkey.com. Please review the survey to see if my proposal is feasible and to see if it would provide a fit to your organization's research and interests.

Should you agree to this proposal, we can further discuss any additional details which would be necessary to implement this research.   I will follow-up with you next week to discuss this with you further and to address any any questions you might have.

I sincerely appreciate your time and consideration.

Sincerely,
Angela Poulakidas

Email: poulakid@nova.edu
Phone: 646-691-8059

Figure 1

Process Model for Perceived Risk and Information Search (Dowling and Staelin, 1994)
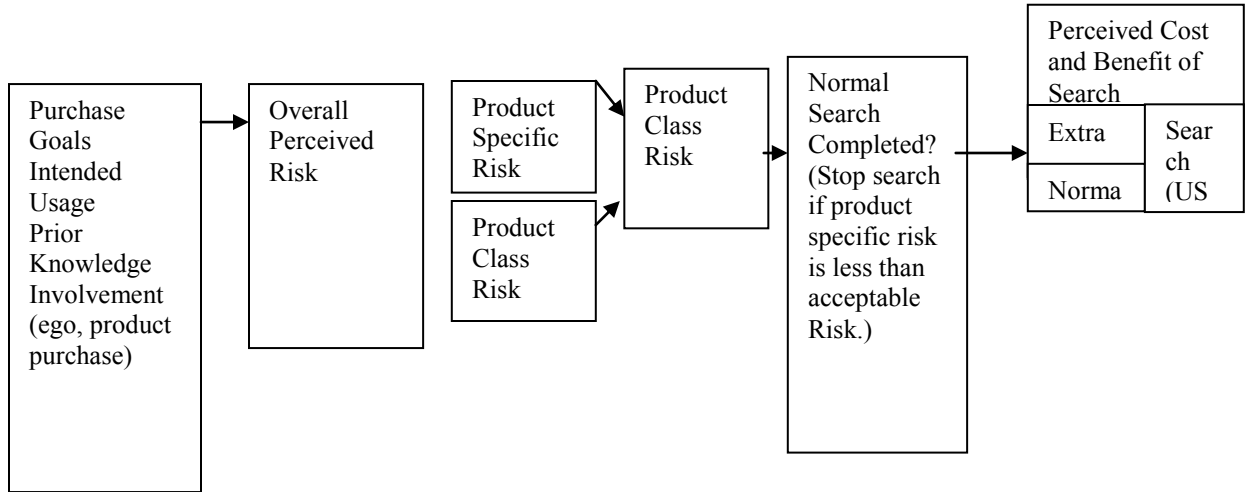
Figure 2

Research Model
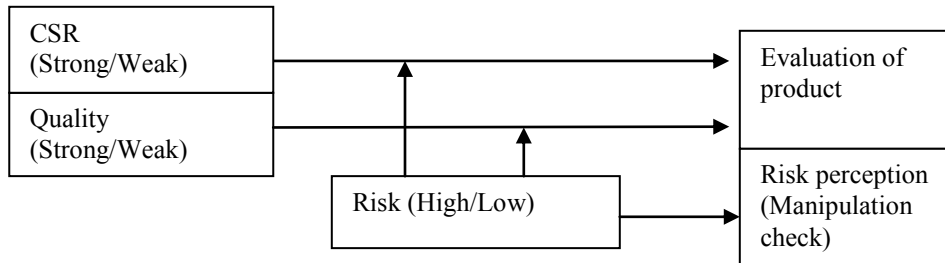
APPENDIX F

PILOT AND FINAL STUDY FACTOR LOADING RESULTS

Pilot Study Results using CR Arguments for Quality: Buyer Intent

	HRSA*	HRWA	LRSA	LRWA
Percent of Total Variance	70.746	82.39	85.406	68.327
BuyerIntent2				
BuyerIntent3	0.932			0.788
BuyerIntent4				
BuyerIntent5	0.929			
BuyerIntent6				
BuyerIntent7	0.912			
BuyerIntent8				
BuyerIntent9				
BuyerIntent10				
BuyerIntent11				
BuyerIntent12		0.945		0.892
BuyerIntent13		0.932		0.752
BuyerIntent14				0.84
BuyerIntent15		0.879		0.933
BuyerIntent16		0.904		0.858
BuyerIntent17		0.876		0.812

*Principal axis factoring could not find a solution for the Buyer Intent scale on the HRSA instrument. The solution presented was found by principal components analysis extracting a one factor solution. Note: Empty cells represent small loadings <0.2.

Pilot Study Results for Using CR argument for CSR: Buyer Intent

	HRSA*	HRWA	LRSA	LRWA
Percent of Total Variance	25.60	28.41	36.20	34.60
BuyerIntent2			.536	
BuyerIntent3	.209	.384		
BuyerIntent4		.241	.625	.545
BuyerIntent5	.416	.787	.649	.320
BuyerIntent6	.504	.831	.442	.287
BuyerIntent7	.347	.499	.456	.586
BuyerIntent8	.806	.428	.587	.522
BuyerIntent9	.583	.592	.790	.654
BuyerIntent10		.454	.555	.549
BuyerIntent11	.472	.558	.727	.539
BuyerIntent12	.396	.711	.588	.841
BuyerIntent13	.753	.640	.649	.741
BuyerIntent14	.757	.419	.745	.652
BuyerIntent15		.509	.427	.836

| BuyerIntent16 | .784 | .535 | .467 | .723 |
| BuyerIntent17 | .581 | .294 | .872 | .715 |

*Principal axis factoring could not find a solution for the Buyer Intent scale on the HRSA instrument. The solution presented was found by principal components analysis extracting a one factor solution.

Note: Empty cells represent small loadings <0.2.

Pilot Study Results using CR Argument for Quality: Diagnosticity of Information

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	85.196	86.015	82.043	78.217
DiagInfo1	0.94	0.952	0.849	0.905
DiagInfo2	.0.971	0.881	0.884	0.889
DiagInfo3	0.854			
DiagInfo4		0.946		0.859
DiagInfo5		0.93	0.98	

Note: Empty cells represent small loadings <0.2.

Pilot Study Results using CR argument for CSR: Diagnosticity of Information

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	78.25	61.97	30.03	50.17
DiagInfo1	.863	.690		.588
DiagInfo2	.862	.670		.872
DiagInfo3	.943	.777	.531	.500
DiagInfo4	.861	.832	.765	.841
DiagInfo5	.890	.937	.780	.668

Note: Empty cells represent small loadings <0.2.

Pilot Study Results using CR argument for Quality: Rating of Attribute Importance

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance		79.953	89.898	79.752
RateAttImp6				0.903
RateAttImp7				0.942
RateAttImp8				0.918
RateAttImp9				0.894
RateAttImp10				0.893
RateAttImp11				0.879
RateAttImp12				0.818
RateAttImp13				0.95
RateAttImp14				0.927
RateAttImp15				
RateAttImp16				
RateAttImp17				

Note: Empty cells represent small loadings <0.2.

Pilot Study Results for Purchasing Scenarios Using CR argument for CSR: Rating of Attribute Importance

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	32.30	40.08	35.35	54.28
RateAttImp6	.349	.901	.926	.964
RateAttImp7	.427	.827	.819	.941
RateAttImp8	.577	.923	.799	.778
RateAttImp9	.576	.702	.877	.739
RateAttImp10	.598	.557	.804	.705
RateAttImp11	.266	.473	.573	.840
RateAttImp12	-.408	.422	.255	.845
RateAttImp13	-.214	.686		.650
RateAttImp14	.655	-.761		
RateAttImp15	-.881	.832	.362	.653
RateAttImp16	.852	-.535	.208	.331
RateAttImp17	-.579	.555	.280	.809

Note: Empty cells represent small loadings <0.2.

Pilot Study Results Using CR Argument for Quality: Rating of Perception of Risk

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	84.373	70.016	89.318	61.97
RatePercRsk18		0.881	0.899	
RatePercRsk19	0.905	0.752	0.982	0.793
RatePercRsk20	0.878	0.928		0.851
RatePercRsk21	0.97			
RatePercRsk22		0.774	-0.943	
RatePercRsk23			0.931	0.711
RatePercRsk24				
RatePercRsk25			0.968	
RatePercRsk26				
RatePercRsk27				

Note: Empty cells represent small loadings <0.2.

Pilot Study Results for Purchasing Scenarios Using CR argument for CSR: Rating of Perceived Risk.

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	23.57	28.28	30.74	27.25
RatePercRsk18	.720	.960	.911	.905
RatePercRsk19	.699	.896	.647	.586
RatePercRsk20	.821	.719	.702	.772
RatePercRsk21	.609	.270	.385	.464
RatePercRsk22			.693	.462
RatePercRsk23			.245	
RatePercRsk24			.213	.454
RatePercRsk25	.488	.652	.353	.565
RatePercRsk26			.363	
RatePercRsk27			.586	

Note: Empty cells represent small loadings <0.2.

Pilot Study Results using CR Argument for Quality: Rating of Strength of Corporate Argument

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	77.342	85.553	93.968	68.327
RateStrCRArg28	0.889		0.923	0.865
RateStrCRArg29				
RateStrCRArg30	0.9		0.9	0.859
RateStrCRArg31		0.925		0.736
RateStrCRArg32		0.925		0.824
RateStrCRArg33	0.848	0.999	0.953	0.874
RateStrCRArg34		0.999		0.793
RateStrCRArg35				

Note: Empty cells represent small loadings <0.2.

Pilot Study Results using CR argument for CSR: Rating of Strength of Corporate Argument

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	25.35	48.43	40.17	34.97
RateStrCRArg28	.607	.842	.333	.706
RateStrCRArg29	-.309	.349	-.203	.453
RateStrCRArg30	.657	.694	.516	.632
RateStrCRArg31	.338	.512	.723	.536
RateStrCRArg32		.739	.918	.384
RateStrCRArg33	.960	.958	.664	.488
RateStrCRArg34	.251	.722	.677	.529
RateStrCRArg35		.560	.729	.862

Note: Empty cells represent small loadings <0.2.

Pilot Study Results for using CR Argument for Quality: Involvement in Scenario

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	89.356	73.338	85.449	
InvScen36	0.954	0.76	0.982	
InvScen37	0.965	0.912	0.938	
InvScen38	0.923	0.889	0.873	
InvScen39	0.939			
InvScen40				

Note: Empty cells represent small loadings <0.2.

Pilot Study Results for using CR argument for CSR : Involvement in Scenario

	HRSA	HRWA	LRSA	LRWA
Percent of Total Variance	41.92	69.74	57.28	75.26
InvScen36	.457	.956	.500	.849
InvScen37	.831	.917	.668	.895
InvScen38	.817	.826	.771	.796
InvScen39	.405	.874	.934	.877
InvScen40	.604	.536	.837	.916

Note: Empty cells represent small loadings <0.2.

Final Study Factor Analyses Results: Buyer Intent

	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.851	40.303	40.303	6.851	40.303	40.303	4.590	26.997	26.997
2	3.095	18.204	58.507	3.095	18.204	58.507	4.499	26.465	53.462
3	1.568	9.225	67.732	1.568	9.225	67.732	2.426	14.270	67.732
4	.885	5.203	72.935						
5	.777	4.572	77.507						
6	.591	3.475	80.983						
7	.524	3.082	84.065						
8	.504	2.964	87.028						
9	.425	2.498	89.527						
10	.360	2.120	91.647						
11	.317	1.866	93.513						
12	.265	1.558	95.071						
13	.248	1.459	96.530						
14	.209	1.228	97.758						
15	.160	.941	98.699						
16	.125	.738	99.437						
17	.096	.563	100.000						
Extraction Method: Principal Component Analysis.									

Final Study Factor Analyses Results of Buyer Intent after Non-Important Item Reduction

Total Variance Explained						
	Initial Eigen values			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.805	63.409	63.409	3.805	63.409	63.409
2	.613	10.209	73.618			
3	.493	8.224	81.842			
4	.443	7.376	89.218			
5	.397	6.621	95.839			
6	.250	4.161	100.000			
Extraction Method: Principal Component Analysis.						

Final Study Factor Analyses Results of Diagnosticity of Information

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.350	67.006	67.006	3.350	67.006	67.006
2	.594	11.872	78.878			
3	.492	9.850	88.728			
4	.304	6.079	94.806			
5	.260	5.194	100.000			
Extraction Method: Principal Component Analysis.						

Final Study Factor Analyses Results of Rating Attribute Importance

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.196	43.298	43.298	5.196	43.298	43.298	5.003	41.690	41.690
2	2.698	22.482	65.780	2.698	22.482	65.780	2.684	22.368	64.057
3	1.110	9.252	75.032	1.110	9.252	75.032	1.317	10.974	75.032
4	.887	7.389	82.421						
5	.596	4.966	87.387						
6	.484	4.030	91.417						
7	.368	3.069	94.486						
8	.234	1.946	96.432						
9	.176	1.469	97.901						
10	.150	1.248	99.149						
11	.069	.579	99.728						
12	.033	.272	100.000						

Final Study Factor Analyses Results for Rating of Attribute Importance after Reduction of Non-Important Items

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.201	84.030	84.030	4.201	84.030	84.030
2	.480	9.593	93.623			
3	.174	3.477	97.101			
4	.095	1.894	98.994			
5	.050	1.006	100.000			
Extraction Method: Principal Component Analysis.						

Final Study Factor Analyses Results for Rating Perceived Risk

Total Variance Explained						
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.820	60.664	60.664	1.820	60.664	60.664
2	.684	22.793	83.457			
3	.496	16.543	100.000			
Extraction Method: Principal Component Analysis.						

Final Study Factor Analyses Results for Rating Strength of Corporate Argument

	Total Variance Explained								
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.143	51.784	51.784	4.143	51.784	51.784	2.772	34.655	34.655
2	1.079	13.494	65.278	1.079	13.494	65.278	2.450	30.623	65.278
3	.805	10.059	75.337						
4	.621	7.767	83.104						
5	.549	6.858	89.962						
6	.413	5.161	95.123						
7	.240	3.000	98.124						
8	.150	1.876	100.000						
Extraction Method: Principal Component Analysis.									

Final Study Factor Analyses Results for Rating of Strength of Corporate Reputation Argument after Reduction of Non-Important Items

	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.237	74.576	74.576	2.237	74.576	74.576
2	.490	16.321	90.897			
3	.273	9.103	100.000			
Extraction Method: Principal Component Analysis.						

Final Study Factor Analyses Results for Involvement in Scenario

	Total Variance Explained					
	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.805	76.093	76.093	3.805	76.093	76.093
2	.470	9.404	85.497			
3	.348	6.963	92.460			
4	.259	5.173	97.633			
5	.118	2.367	100.000			
Extraction Method: Principal Component Analysis.						

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