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SUPPLY PARTNER SELECTION FOR THE CO-DEVELOPMENT OF
INNOVATIVE PRODUCTS: THE KEY ROLE OF REPUTATION

By

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THESIS

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ABSTRACT

The purpose of this thesis is to develop and test a framework of industrial partner selection by integrating constructs from the informational economics, social exchange, and organizational buying behavior literatures. A new construct, supplier reputation, is defined and its properties are proposed. A three stage model of supplier selection is then developed which integrates the supplier reputation construct within the selection decision framework. The resulting framework offers an understanding of the decision rules employed by organizations in the business-to-business setting, and delineates the importance of different elements of supplier reputation in the developed selection process-stages.

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CHAPTER 1

INTRODUCTION

One of the most critical activities performed by an organizational buying unit is the selection of a new supplier (Dickson 1966). The importance of this activity can be increased when the new supplier will be a critical participant in the co-development or co-marketing of an innovative new product or service (Anderson and Narus 1990; Bucklin and Sengupta 1993; Varadarajan and Rajaratnam 1986). The importance of this activity can also be attributed to the estimated 60 percent cost of goods that result from a manufacturers purchase of goods and services (Stuart 1993). Others suggest that for high technology firms, organizational buying of materials and services represent nearly 80 percent of the total cost of goods (Burton 1988). The strategic importance of organizational buying has generated significant research in the business-to-business and industrial literature during the last 30 years. This research stream has attempted to classify, interpret, and predict the complex, multi-stage process of organizational buying behavior (Johnston and Lewin 1996). Recent changes in the business-to-business environment has increased attention on organizational buying behavior and the supplier selection decision (*Purchasing*, 1995).

Some of the recent changes in the business-to-business environment include the proliferation of alternative organizational supply arrangements such as strategic partnerships, alliances, and other cooperative interorganizational relationships (Achrol 1991; Anderson, Hakansson, and Johanson 1994; Ellram 1990, 1995; Frazier, Speckman, and O'Neal 1988; Larson 1992; Ring and Van de Ven 1994). These alternative forms of supply relationships have

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emerged in part due to aggressive international competition, just-in-time (JIT) production needs, and the simultaneous need for supplier quality, speed, and flexibility (Pearson and Ellram 1995; Stuart 1993; Swift 1995). Much of the previous industrial and organizational buying research examined supplier selection from a transactional cost perspective (Williamson 1975, 1985), which predicts that the frequency, uncertainty, and specification of assets dedicated to exchange between two firms will directly influence the costs of establishing a supply contract (Stump 1995). However, this 'low-cost' transactional perspective has been unable to explain the recent proliferation of new alternative organizational supply arrangements.

These changes in organizational supply relationships, and the resulting importance on suppler selection, highlight a research problem that has not been explicitly examined in the industrial and business-to-business literature. *How do firms select a long-term supply partner in which there is no existing product or service currently available?* This problem is reflective of a manufacturer looking for a new supply partner who can provide expertise in new technology, or in the development, design, and/or marketing of a new product or service.

To begin the task of obtaining better understanding the selection process for long-term suppliers, the business context for this research is defined within the organizational buying decision process. To do so, four specific assumptions will be made about the organizational buying decision process to address this unique supplier selection problem. These four key assumptions include:

1.   Supplier selection is conducted for a new task.[1]

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[1]New task is an entirely different purchasing criteria compared to a modified rebuy, or a straight rebuy as outlined by Robinson, Faris, and Wind (1967).

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2.   The desired product or service does not currently exist and is to be co-developed by the manufacturer and new supplier.

3.   There is a need to select only one primary long-term supplier.

4.   Supplier selection will not come from within the group of suppliers in which there exists a previous business-to-business relationship.

The research problem just framed is reflective, albeit an extreme example, of the recent changes in supplier-manufacturer relationships, and is an attempt to better understand the supplier selection decision process. As suggested earlier, implicit in these four assumptions regarding the organizational buying decision context, is the notion of higher levels of organizational risk and its associated higher levels of organizational return when using these alternative supply relationships. While the influence of organizational risk is suggested to indirectly and directly influence the supplier selection decision process, an important construct---*supplier reputation*--- increases in importance and value as more organizational risk enters into the decision process (Granovetter 1985; Nelson 1970; Stigler 1962). One unique contribution of this dissertation is the specific examination of firm reputation in the supplier selection process.

The primary objective of this dissertation is to better understand the selection process for new, long-term suppliers, with specific attention given to the nature and role of supplier *reputation*. To accomplish this primary objective, a working definition of supplier reputation is developed. Special attention is given to reputation and examining its use as a criterion at different stages in the selection decision process. These different stages in the selection process will be developed from the existing organizational buying behavior literature. In addition to the primary objective---understanding the role of reputation in the selection process for suppliers---

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secondary objectives of this dissertation are to:

- Refine the existing organizational buying framework to address the problem of selecting a new, long-term supply partner.

- Integrate previously separate literatures on the supplier selection process.

- Propose general elements and supporting variables that constitute supplier reputation.

- Develop a supplier selection decision model.

To test the developed supplier selection model and the hypothesized role of reputation, an exploratory field study is proposed in the interorganizational setting. This exploratory field study will include interviews of executives involved in this strategic organizational decision, and will be followed by a industrial field survey designed to capture the use of reputation in the supplier selection process.

Before examining previous research regarding the reputation construct, a review of the organizational buying behavior literature will be provided in Chapter Two. This review will theoretically ground this research on supplier reputation and selection by first offering a refinement of the organizational buying process. This refinement allows a more direct approach in examining the research problem framed by the four key assumptions described earlier, and is one of the unique contributions of this dissertation. Also in Chapter Two, a definition of the term 'supplier reputation' is offered with a brief explanation of key words included in the definition. Next, three general elements of supplier reputation are proposed with supporting variables derived from the relevant literature. Finally, Chapter Two introduces the dimensions of organizational risk and uncertainty within the refined framework of supplier selection.

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Chapter Three introduces four research propositions that guide this business-to-business or industrial supplier selection research. The three stage model of supplier reputation commences from these four propositions, and incorporates the newly developed construct of reputation within the theoretical framework derived from the organizational buying literature in Chapter Two. Finally in Chapter Three, these four propositions and resulting model are used as a basis for formal hypotheses generation.

Chapter Four outlines the research methodology used in this dissertation to examine the hypotheses proposed in Chapter Three. Care will be given to describe the purpose of industry specific interviews, how the field survey instrument was developed and pre-tested, and method of data collection. The analysis plan and corresponding procedures employed to better understand the collected survey data will then be outlined. Chapter Four provides a methodological guide prior to presenting the research results described in Chapter Five.

Chapter Five describes the results of the survey in several steps. First, a demographic profile of a typical respondent is created from the preliminary frequency analysis. Second, results are presented from the descriptive analysis of the elements of reputation and their supporting variables by process-stage. Third, exploratory factor analytic results are presented with the supporting logic justifying application of this method. Fourth, specific statistical analysis (t-tests) are completed for each of the individual hypothesis. Finally, Chapter Five presents difference scores that were calculated to further illuminate survey data results.

Chapter Six presents additional demographic analysis, to capture insights from the observed similarities and differences in the survey respondents, and how these differences influence the importance placed upon the elements of reputation in the three selection process-

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stages. Finally, Chapter Seven summarizes the key results described in the previous six chapters.

In addition, Chapter Seven discusses the research contributions, limitations, implications, and

future research needs in the general area of supplier reputation and the selection decision process.

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CHAPTER 2

LITERATURE REVIEW

Organizational Buying Behavior

Bunn (1993) suggested that one competitive advantage in business-to-business markets is the ability to understand a partnering firm's organizational buying behavior. Because organizational buying behavior is such a complex, multi-stage process, the industrial marketing literature has been attempting to explain this complex process for the last three decades. Much of the extant writing has cited three early works by Robinson, Faris, and Wind (1967), Sheth (1973), and Webster and Wind (1972), as being instrumental in establishing a conceptual base for organizational buying behavior. Each of these early models describe the selection of a supplier as a process involving several steps.

The most widely cited source for these organizational buying steps is Robinson, Faris, and Wind (1967), who outline eight steps that describe the industrial buying situation. This eight step model describes a sequence of activities that organizational buyers engage in during the decision process. These eight steps include; (1) recognize needs, (2) determine characteristics, (3) establish specifications, (4) identify potential sources, (5) request proposals, (6) evaluate proposals, (7) select supplier, and (8) post-purchase evaluation. As reflected in these eight steps, the organizational buying process is not viewed as an isolated act (or event) that can describe consumer purchases, but rather as a process that is shaped by a host of internal and external forces. These forces influence a rather complex set of smaller decisions that occur during the eight steps, and are influenced by an array of individuals just from within the buying

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organization.

To further simplify the complex nature of organizational buying behavior, three types of buying situations have been delineated. These three types of buying situations include (1) new task, (2) modified rebuy, and (3) straight rebuy (Anderson, Chu, and Weitz 1987; Bunn 1993; Robinson, Faris, and Wind 1967; Sheth 1973; and Webster and Wind 1972). Each of the three types of buying decisions must be related to the eight step model to capture the 'Buygrid' framework illustrated in Table 2.1 (Anderson, Chu, and Weitz 1987; Bunn 1993; Robinson, Faris, and Wind 1967; Stern and El-Ansary 1992). In the new task buying situation, which is the primary context for this new supplier research, the problem or need is perceived by the organization as being totally different from previous buying experiences. Therefore, additional information is needed to effectively address the newness of the problem and to effectively consider alternative sources for supply partners. This unique type of buying situation was further examined in a recent review of the organizational buying behavior literature.

In their review article, Johnston and Lewin (1996) propose an integrated model of organizational buying behavior that includes the 'Buygrid' decision process outlined by the three early models (Robinson, Faris, and Wind 1967; Sheth 1973; and Webster and Wind 1972). Central to the integrated organizational buying behavior model offered by Johnston and Lewin (1996), is a decision process very similar to the sequence of eight steps outlined by earlier organizational buying behavior researchers (Robinson, Faris, and Wind 1967), and is provided in Table 2.2. In addition to these eight steps generated from earlier work (Table 2.2), ten constructs are included in the integrated organizational buying behavior model (Johnston and Lewin 1996).

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These include eight original constructs, called characteristics,[2] which were gleaned from the

earlier work (Robinson, Wind, and Faris 1967; Sheth 1973; and Webster and Wind 1972), and

four new constructs.

Two of the new constructs, *decision rules* and role stress, are integrated into Johnston and

Lewins' 1996 organizational buying behavior model because of their operation at the

*intra*organizational level. The remaining two new constructs, buyer-seller relationships and

communication networks, were suggested to operate at the *inter*organizational level. These latter

two constructs were depicted separately and not integrated into the Johnston and Lewin model.

This exclusion of buyer-seller relationships and communication networks is unfortunate due to

potential examination and application of these two constructs in this dissertation. While there is

no explanation given for this omission, it could be assumed this omission is due to the dyadic

nature of interfirm interaction in organizational buying behavior. The new construct *decision*

rules however, was central to the integrated model offered by Johnston and Lewin and an

important contribution to the organizational buying literature.

The *decision rules* suggested by Johnston and Lewin (1996) are posited to be influenced

directly and indirectly by the many different characteristics of the integrated organizational

buying behavior model. An important theoretical point suggested by the authors, is that a

decision rule "is influenced by environmental, organizational, purchase, and seller characteristics,

and is expected to vary across the stages of the organizational buying process" (Johnston and

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[2]These eight original constructs are reflective of earlier organizational buying behavior
research and include the constructs; environmental, organizational, group, individual, participant,
purchase, seller, informational, and conflict/negotiation (Robinson, Wind, and Faris 1967; Sheth
1973; Webster and Wind 1972).

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Lewin, page 4, 1996). Organizational decision rules are not only influenced by environmental, organizational, purchase, and seller characteristics, but can vary in each of the organizational buying stages from formalized rules and documented procedures, to informal rules-of-thumb (Vyas and Woodside 1984; Woodside 1988). Figure 2.1 is an adaptation of a portion of the integrated organizational buying behavior model offered by Johnston and Lewin (1996), and depicts the relationships between key constructs most relevant to this dissertation.

The primary focus of this dissertation is to develop a better understanding of how the new construct of *decision rules* influence organizational buying behavior as suggested by Johnston and Lewin (1996). While others have also mentioned the interaction of decision rules in the selection of suppliers with varying degrees of precision (Cardozo 1983; Cyert, Simon and Trow 1956; Moore 1969; Patton 1996; Vyas and Woodside 1984; Woodside 1988), Johnston and Lewin are the first to specify its theoretical relationship with other key constructs in the organizational buying literature. This research specifically examines the influence of reputation on the selection of a new supplier, and extends the organizational buyer behavior research of Johnston and Lewin (1996) regarding the importance of decision rules and its relationship with other organizational, purchase, seller, and group characteristics. This research also creates new understanding about the influence supplier reputation (as defined later in this chapter) has upon supplier choice, and which elements of reputation are most important during the supplier selection process. To adequately consider the decision rules suggested by Johnston and Lewin (1996) within the four key assumptions outlined earlier, requires a refinement of the eight steps outlined in the integrated organizational buying behavior model presented in Table 2.2. This refinement is needed to offer a finite series of simplified decision rules that can be used in the

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new supplier selection decision problem framed thus far.

Organizational Buying Behavior Model Refinement

Need recognition, the first of eight stages outlined by Johnston and Lewin, will be assumed to have already occurred in the searching organization due to the four key assumptions presented in the Chapter One.[3] The next two stages of determine characteristics, and establish specifications, are likely to be very rudimentary because the product or service will be developed in the future, and thus focuses attention on the supply organization itself, and less on the examination of a specific product or service. The next four stages of identify potential sources, request proposals, evaluate proposals, and select supplier, will be refined into three process-stages. This is accomplished by combining stage five, request proposals, and stage six, evaluate proposals. The newly developed stages (termed process-stages) are (1) *searching* for sources, (2) *sorting* identified sources, and (3) *selection* of a supplier. These three new process-stages are developed to better represent the context of this research problem, and to offer simplified rules in the organizational decision process when selecting a new supply partner. These three process-stages also remove the cumbersome issue of proposals and bids typical of more traditional supply relationships. This refinement of the organizational buying behavior model and subsequent development of the three process-stages is completed to remove the evaluation of an

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[3] These assumptions are critical to the research context, and for reading convenience are as follows; (1) supplier selection is needed for a new task, (2) the desired product or service does not currently exist and is to be co-developed by the manufacturer and new supplier, (3) there is a need to select only one primary long-term supplier, and (4) supplier selection will not come from within the group of suppliers in which there exists a previous business-to-business relationship.

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existing product or service, which allows focused attention to be placed upon supplier reputation, and facilitates examination of reputation in an empirical setting.

As the selection process-stages advance from (1) searching, to (2) sorting, to (3) selection, an increase in the cost of gathering the desired organizational information is expected. This increase in cost is central to the simplified decision rules employed later in the dissertation and result from the need to acquire additional (more costly) information to complete each sequential process-stage in new supplier selection (Williamson 1985; Wolinsky 1993). It is suggested that an organization needing a new supply partner will progress through each process-stage at some point in the supplier selection process and that variable cost---in time, human capital, and resources---will increase with each process-stage advancement (Cardozo 1983; Keeney 1982). This increase in variable cost is attributed to an organization needing to obtain newer, less readily available, and more costly information about possible supply partners to decrease the probability for adverse selection (Hirshleifer and Riley 1979). When there is an absence of perfect markets (i.e., perfect communication, instantaneous equilibrium, and costless transactions) and higher degrees of uncertainty and risk, organizations must balance the potential for adverse supply partner selection with the cost---and resulting value---of additional information (Axelrod 1984; Casson 1991; Nicholson 1989; Tirole 1988).

For example, the amount of information and resources needed to build a list of potential candidates in the *searching* process-stage, is anticipated to be less than the information and resources needed to narrow the number of potential candidates in the consideration set during the *sorting* process-stage, which is anticipated to be less than the information and resources needed to make the decision choice of one supply firm during the *selection* process-stage. However, it

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could be possible for the searching organization to skip or combine process-stages when there are a limited number of possible supply partner candidates. An example of this situation would be a firm looking for a unique technological input for which there may only be a few available supply candidates to enter into a long-term relationship. This situation would diminish or perhaps even eliminate the need for *sorting* the potential candidates into a smaller consideration set. Another point of clarification is that it is unclear whether each of the eight original steps suggested in the organizational buying behavior literature (See Table 2.2) occurs with regularity, or in sequence in the new supplier selection process. However, there is empirical support for the existence of these distinct process-stages in the selection of a supplier when there is an existing product or service to evaluate (Gregory 1986; Narasimhan 1983; Nydick and Hill 1992; Wilson 1994). Finally, in this dissertation the selection of a new supplier is considered a group decision process (Johnston and Bonoma 1981) that may include multiple interactions by individuals involved in the selection process. A specific example in new supplier selection of this group buying decision process not being limited to purchasing personnel alone was discovered during early research interviews and is discussed in Chapter Four.

Reputation

Central to this research is the definition and use of the construct *Reputation* in supplier selection. Reputation is a phenomenon of considerable social and scientific importance, yet has received little systematic study by social and behavioral researchers (Bromely 1993; Fombrun 1996). Perhaps this is because we develop an intuitive grasp of the concept, both in the individual and organizational form, from early social interaction and discount the need for further

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examination. This common-sense grasp may explain why "reputation" rarely appears in the titles of books, journal articles, technical reports, and social psychology textbooks (Bromley 1993). However, this dissertation argues that reputation is an important influencing variable in interorganizational social behavior---although not clearly defined in the limited reputational research that has preceded this paper---and is perhaps the dominant decision variable used in the selection of a valuable interorganizational supplier of a product or service to be provided in the future.

In fact, it is difficult to consider the complex decision process of selecting a new, long-term supply partner without using firm reputation. One helpful method of considering reputation would be to consider it a useful 'tool' by which a firm can quickly gather information to assess possible supply candidates. If viewed as a selection tool, reputation can increase the speed and accuracy with which a firm can complete the three process-stages of searching, sorting, and selecting a new supply partner. The use of reputation in the three process-stages can best be described as a descriptive method of business-to-business analysis. This descriptive method of rating or ranking possible supply partners based upon reputation elements however, does not necessarily exclude the use of a more prescriptive method of analysis. Perhaps assessing the reputation of possible suppliers is the logical first step in a process that leads to more formal analysis. Alternatively, perhaps assessing reputation is a primary (or preliminary) function of more formal analysis. Each of these approaches to business-to-business analysis could be utilized depending upon the definition and use of the term reputation. The question then becomes, what makes up a firms reputation, what previous literature examines this construct, and how is it used in the organizational buying context when faced with a new supplier selection

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decision process?

Supplier Reputation Defined

Reputation is one of many organizational traits influencing exchange. Most of the research reviewed in this dissertation describe results supportive of the general influence of reputation in a variety of research settings. The reviewed research often takes the perspective that reputation is a rather broad, singular construct that encompasses all subjective characteristics too difficult or complex to measure. Some researchers consider an organizational reputation to have the capacity to influence their product offerings, stock offerings, as well as the productivity and loyalty of employees (Aaker 1990; Ahmed and Pavlick 1992; Bromley 1993; Diamond 1989; Fombrun 1996; Hall 1992; Keller 1993; Richardson 1995; and Wallman 1995). However, reputation is suggested in this dissertation to be a more powerful construct, perhaps multidimensional in nature, that warrants research attention specifically focusing on how reputation influences organizational buying behavior during the selection of a new supplier. The present author suggests a firm's reputation can be a valuable organizational asset, albeit often intangible in nature, that facilitates exchange relationships when there are high levels of organizational risk and uncertainty associated with an anticipated long-term relationship.

To begin this research, a working definition of reputation in the supplier selection context is proposed.

Supplier Reputation: Composite expectancy of future performance generated from firm

attributes, behaviors, and competencies which can be real and/or imagined.

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The term 'expectancy' in the supplier reputation definition carries many different implications just from within the existing marketing literature. For example, several authors have used multilevel conceptualization of the term expectancy (or expectation) in theoretical and empirical studies (Boulding, Kalra, Staelin, and Zeithaml 1993; Zeithaml, Berry, and Parasuraman 1993). These conceptualizations include "should and will," "desired and adequate," and "ideal and realistic" expectations. The term expectancy will be grounded in this research as defined by Vroom (1964). Vroom defines expectancy simply as the likelihood that a particular act will be followed by a particular outcome. This expectancy can be for either positive and/or negative behavior. In the new supplier setting, a reputation or expectancy could be described as the likelihood that a commitment by a supplier to provide a particular input in the co-development process of a new innovative product, would indeed be provided. This expectancy, or likelihood of a particular supply firm's actions, can be generated from a variety of sources such as direct experience, observation, and either direct or indirect communication from others.

While expectancy is an important term in the definition of reputation, another similar term---attitude---is not included in the definition. Even though there are similarities between the term attitude and the term reputation as developed in this dissertation, reputation differs from attitude in several ways. First, an attitude is defined by Fishbein and Ajzen as "a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (1975, page 6). This definition is very similar to reputation in that both can be favorable or unfavorable, learned, and some form of action is a predisposed result. However, a reputation is distinctly different because a reputation is most effectively communicated by others, most accurately measured by others, and is not necessarily consistent in nature. Second, it is the

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measurement of ones reputation by other parties that allows a reputation to have interorganizational value and worth.

These two clarifying points ground the term reputation as having both an individual dyadic component, and a social component that is best measured by a third party. Because of the assumptions framing this research outlined in Chapter One, emphasis will be placed on the social component of reputation. For example, a supply firm may have a reputation for being inconsistent in product quality, delivery schedules, or ability to work collaboratively and be unaware of this reputation because it is not an attitude held by them. Their "attitude" towards consistent product quality, delivery schedules, and ability to work collaboratively with partnering firms may in fact be very positive, but different from their "reputation" as measured by other firms.[4]

It has been suggested that reputation, defined earlier as a composite expectation, is an important signal that can assist firms in the quest for a reliable exchange partner (Barney and Hanson 1994; Boulding and Kirmani 1993; Fombrun 1996; Granovetter 1985; Teece 1987). A majority of existing research on the reputation phenomenon has historically been within an economic or game-theoretic framework (Camerer and Weigelt 1988; Hill 1990; Kreps and Wilson 1982; Milgrom and Roberts 1982). The normative framework of game-theory has predominantly been in a win/loose negotiation, payoff distribution, or bargaining context that does not allow the preferences of the participants to coincide (Kreps 1990; Tirole 1988).

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[4]This example is not intended to diminish the importance and worth of measuring reputation based on critical self-analysis, but rather is intended to distinguish attitude from reputation.

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Because opportunism is the "norm" in these games, theoretical developments of reputation lack in ability to explain and predict the essential cooperative behavior framed in this supplier selection problem.

Empirical Research

There is limited literature within marketing that examines firm reputation. Most of the researchers examining this construct used reputation primarily as a secondary, independent variable that was either explicitly stated (but not studied), or implicitly assumed that reputation was a contributing factor (Dawar and Parker 1994; Goldberg and Hartwick 1990; Heide and John 1992; Jaworski and Kohli 1993; Rao and Bergen 1992; Rao and Monroe 1989, 1995; Yoon, Guffey, and Kijewski 1993; Zeithaml, Berry, and Parasuraman 1993). These authors approached firm reputation from the neoclassical economic perspective that assumes rational, self interested behavior, and accordingly faced the same theoretical constraints found in normative game theory.

Other marketing researchers approached the exchange relationship differently by considering the social aspects of behavior (Anderson and Narus 1990; Bucklin and Sengupta 1993; Dwyer, Shurr, and Oh 1987; Heide and John 1992; Herbig, Milewicz, and Golden 1994; Moorman, Zaltman, and Deshpande 1992; Morgan and Hunt 1994; Smith and Barclay 1997). These social behavior studies examined the *inter* and *intra*organizational impacts of firm reputation without explicitly measuring the construct empirically. While empirical studies on reputation have been limited in number and depth, there is one widely cited study by *Fortune* magazine regarding firm reputation.

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Fortune Data

The most widely referenced study on firm reputation is an annual survey initiated in 1982 by *Fortune* magazine in which financial analysts and industry experts rate companies from 41 different industries on eight characteristics *(Fortune* 1995). However, the use of the term reputation in the *Fortune* survey is not consistent with previous theoretical work in informational economics, sociology, organizational buying behavior, and marketing. Also, empirical research into the usefulness of the *Fortune* survey data has proved controversial regarding measurement of the reputation construct (Fombrun and Shanley 1990; Fryxell and Wang 1994; McGuire, Sundgren, and Scheeweis 1988). Reflective of this controversy about the *Fortune* data is Fombrun and Shanley's (1990) research which revealed that 84% of the variance could be explained by a single eigenvector, and Fryxell and Wang's (1994) analysis suggesting the possibility of unidimensionality of the *Fortune* data, with a heavy bias on financial measures.

Results of the *Fortune* survey and its subsequent analysis support the first general element of a supply firms' reputation. *Attribute* is the first of three general elements to be introduced as a determinant of a suppliers reputation. These three general elements will be further developed to provide a framework which allows examination of the reputation construct, and are hypothesized to embody a suppliers reputation as defined earlier in the interorganizational setting. A description of each of the three general elements will be followed by individual support variables that drive each general element. Figure 2.2 provides a visual structure of the three elements of supplier reputation.

The attribute element is the most objective of the three general elements of reputation. Meaning, a potential partnering firm searching for a new supplier is most likely to directly

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observe or validate the supporting variables in the element attribute. The first supporting

variable of attribute is *financial stability,* and flows logically from the results and analysis of the

Fortune survey. This variable is intended to capture the underlying factor of analysis suggested

by researchers who rigorously examined the *Fortune* survey data. This variable is also intended

to capture the potential risk of selecting a long-term supply partner who may be unable to honor

its future supply arrangement due to financial resource constraints. Another variable supporting

the element attribute is *managerial stability.* This variable is intended to capture the potential

risk of high managerial turnover in critical leadership positions in the new supply partnership

which may often be related to the cultural orientation of the firm. Although there are no obvious

citations suggesting the inclusion of the managerial stability variable, there is enough intuitive

logic to justify its inclusion in the preliminary model.

In addition to Fombrun and Shanley (1990) and Fryxell and Wang (1994), two other

studies considered organizational reputation as the dependent variable of analysis. The first

study by Shrum and Wuthnow (1988) suggests that reputation is mediated by network position,

and that firm *size* will influence reputation independently of the effects of network position.

While the hypothesized relationship for size was not supported by structured interviews used in

the study (Shrum and Wuthnow 1988), size will be included as a supporting variable to attribute.

Rao (1994) conducted the second dependent study of reputation and suggests that previous

research has not provided any direct evidence that social identity (reputation) underlies

differences in the survival of a firm. Rao (1994) examined historical data from early auto

manufacturers to track informal rankings communicated by the media. These informal rankings

resulted from 'legitimacy' contests for early automobiles in areas such as speed, hill climbing,

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pulling or towing, and endurance. Media, network position, and situational factors will be considered mediating variables influencing reputation in the supplier selection model. While there has been a limited amount of empirical work on reputation, a significant amount of research attention has been given to reputation from a normative perspective.

Normative Research

George Stigler (1961, 1962) first identified the use of reputation in interorganizational exchange by suggesting that uncertainty, due to informational asymmetries, necessitates the use of organizational reputation in the searching process for new employees. In a similar vein, Nelson (1970), and Spence (1974), introduced reputation as a prepurchase signal that can effectively communicate the 'true value' of an organizations product or service. These two authors introduce the problem of needing to select an organizational offering that can not be fully measured until after the offering has been experienced or consumed. This classic information problem, the inability to obtain complete information about an organizational offering, suggests the presence of risk and uncertainty in the selection process which increases the importance placed on an organizations reputation (Allen 1984; Biglaiser 1993; Biglaiser and Friedman 1994; Boulding and Kirmani 1993; Chu and Chu 1994; Jung, Kagel, and Levin 1994; Selten 1978; Shimp and Bearden 1982; Wolinsky 1993). If there is less information available during the selection process, the result is an increase in the level of organizational risk, which in turn directly increases the value and worth of an organizations reputation.

A number of key articles in the early 1980's stimulated extensive research on reputation from a normative approach (Klein and Leffler 1981; Kreps and Wilson 1982; Milgrom and

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Roberts 1982; Shapiro 1982; 1983). The vast majority of this research has a game-theoretic or mathematical modeling framework attempting to provide a behavioral logic for the use of reputation in games and markets. These authors formalized the notion that even a small amount of incomplete information about an organization's 'true type' will influence the actions of other organizations involved in the 'game' of exchange. This notion was further strengthened and generalized by Fundenburg and Levine (1989; 1992) and Schmidt (1993).

Kreps and Wilson (1982) specifically introduced the notion that reputation's effect seems to be positively related to its fragility, and that there are situational factors that influence its use. Other researchers reviewed the role of reputation in games and markets (Wilson 1983) and corporate strategy (Weigelt and Camerer 1988), and suggest that reputation is 'an asset' that can generate future rents. Milgrom and Roberts (1982) also introduce the notion that the value of a reputation increases with its opportunities for use, and suggest an outline of sufficient conditions for the development of reputation. These sufficient conditions specified by Milgrom and Roberts (1982) include; (1) unsure exchange partners, and (2) the availability of repeated exchange activity. These two sufficient conditions emphasize factors tantamount to the dynamic process of selecting a new long-term supplier, and are descriptive of the organizational buying research context framed in this dissertation.

A common theme emerging from the normative research on reputation is that a potential exchange partner is evaluated according to its *"Behavior"* with other organizations. This behavioral component is proposed as the second element of reputation. Often the behavior studied in normative game-theory is opportunistic and predatory in nature, which reflects the existence of competitive forces influencing an 'adversarial' organizational relationship (Bergen,

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Dutta, and Walker 1992; Dobson 1994; Ganesan 1993; John 1984). However, a supply

organizations opportunistic behavior could be projected as an unattractive characteristic by

potential partnering firms in the selection of a new long-term supplier. This introduces the

notion that a behavioral element can have a positive or negative influence on reputation, which

will in turn influence the subsequent attractiveness of potential supply partners. An important

point inferred from the literature guiding this dissertation, is that firm reputation can be used as

an important screening mechanism in the selection of a long-term supplier. Normative research

is not alone in recognizing the power of cooperative behavior, organizational researchers have

also considered the existence of competitive forces that promote 'less adversarial' business-to-

business relationships.

Relationship Research

In the last few years, scholars have increased research attention on why business-to-

business relationships have become such an integral part of organizational strategy (Casson

1991; Chong 1992; Hall 1992; Larson 1992; Lorange, Roos, and Bronn 1992; Ohmae 1989;

Raub and Weesie 1990; Ring and Van de Ven 1994; Smith and Barclay 1997; Teece 1987,

1992). Granovetter (1985) was particularly influential in this recent increased research attention

by proposing that for a meta-theory to be developed in the behavioral sciences, a link must be

made between economic action and social relations. This suggestion is supported by

Granovetter's argument that most behavior is closely 'embedded' in networks of personal

relationships, and that the field of economics has taken an under-socialized view of human

behavior, while the fields of sociology and psychology have taken an over-socialized view.

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These two extreme views, and the tendency for each field to discount the others core assumptions, have not allowed these embedded networks of personal and organizational relationships to be examined thoroughly (Granovetter 1985).

This dissertation's concentration on supply firm reputation, and the supplier selection decision process is one attempt to examine the neglected 'embedded' research described by Granovetter. In fact, Granovetter uses reputation as one example of embeddedness in personal and organizational relationships, and even suggests reputation can induce an organization to abstain from opportunistic behavior considered 'rational' by economic theorists. Granovetter (1985) suggests that the decision to not behave opportunistically occurs because information about that opportunistic behavior is communicated to others (Herr, Kardes, and Kim 1991), and will have a potential long-term negative effect on ones reputation.

There has been some research in marketing conducted by Dwyer, Schurr, and Oh (1987) considering the importance of 'less adversarial' norms in marketing relationships. This research highlights the role of norms in organizational relationship success, and introduces the notion of measuring an organization according to what they think about each others expected actions in an exchange relationship. Other marketing research has approached less adversarial relationships from a buyer-seller perspective (Dwyer, Schurr, and Oh 1987; Ganesan 1994; Heide and John 1990, 1992; Speckman and Johnston 1986), channels perspective (Anderson Lodish, and Weitz 1987; Anderson and Weitz 1989, 1992; Anderson and Narus 1984, 1990; Ronchetto, Hutt, and Reingen 1989), alliance perspective (Achrol, Scheer, and Stern 1990; Bucklin and Sengupta 1993; Varadarajan and Rajaratnam 1986), and the legal and ethical perspective (Gundlach 1994; Gundlach and Murphy 1993; Williams and Murphy 1990).

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Variables preeminent in the relationship marketing literature will be included as supporting variables for the behavioral elements of reputation. These variables are utilized because relationship effectiveness is a common dependent variable in relationship research, and appropriate to include in the supplier selection model developed in this dissertation. When relationship researchers examine more collaborative, less adversarial exchange between organizations, the variables *trust, commitment,* and *cooperation* are commonly identified as having theoretical relevance to relationship effectiveness (Anderson and Narus 1990; Anderson and Weitz 1989; Dwyer, Schurr, and Oh 1987; Moorman, Zaltman, and Deshpande 1992; Morgan and Hunt 1994; Smith and Barclay 1997). There is also face validity for the inclusion of these three behavioral support variables when an organization is considering a new, long-term supply partner (Axelrod 1984; Hunt 1991; Kollock 1994).

Other variables in the behavioral element supported by relationship research include adaptive and *innovative*. Adaptive behavior was identified by the Industrial Marketing and Purchasing Group (IMP Group) as a positive bonding mechanism in a collaborative exchange relationship (Hakansson 1982; Hallen, Johanson, and Seyed-Mohamed 1991). Innovative behavior affects the development of an organizational relationship and is suggested by Campbell (1995) as an influential strategy in supplier selection by a manufacturer. However, there is apparent overlap between the behavioral variables adaptive and cooperative. Thus, cooperation, the variable most common to the relationship literature, will be used as a support variable to the behavioral element and is considered to embody both adaptive and cooperative.

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Industrial Research

The importance of supplier selection has not been overlooked by industrial researchers. Lehmann and O'Shaughnessy (1974) examined problems likely to be encountered in the industrial buying process, and identified four distinct categories that influence the adoption of products into the buying firm. These four categories include (1) routine order, (2) procedural problem, (3) performance problem, and (4) political problem (Lehmann and O'Shaughnessy 1974). The category most reflective of the selection problem identified in this dissertation would clearly not be a routine order, rather a combination of procedural, performance, and political, with particular emphasis on the category of political problems. The combination of these three categories (procedural, performance, and political) is influential in the introduction of the third general element of reputation.

The final general element proposed to examine the supplier reputation construct is *Competency*. This element is distinct from the first two in that competency is the most subjective element of the three, and captures more of the common characteristics examined in the traditional industrial marketing literature (Hill, Alexander, and Cross 1975; Johnston and Speckman 1987). A description of some of these more common characteristics are captured in studies by Lehmann and O'Shaughnessy (1974, 1982), Evans (1982), and Wilson (1994). These researchers examined the supplier selection process according to the four categories suggested by Lehmann and O'Shaughnessy (1974), and found four common criteria. These four emerging criteria include; (1) quality, (2) delivery, (3) price, and (4) service. *Quality* (Garvin 1987; Wernerfelt 1988) was identified by two studies as the criteria with the highest importance rank when selecting a supplier (Lehmann and O'Shaughnessy 1982; and Wilson 1994). Two studies

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identified *delivery* to be the criteria with the highest importance rank, and *price* to have been the

second highest importance rank when selecting a supplier (Lehmann and O'Shaughnessy 1974;

Evans 1982). Because the supplier selection decision context framed for this paper is a product

or service to be developed in the future, the price variable will be respecified as an expectation of

lower total input *cost*.

The final variable common to these studies was *service*, which was the second highest

choice criteria in the most recent work by Wilson (1994). The recent increasing importance of

service is reflective of the amount of popular press and research attention given to that

supporting variable (Anderson and Sullivan 1993; Bolton and Drew 1991; Fisk, Brown, and

Bitner 1993; Hauser, Simester, and Wernerfelt 1994; Sudharshan, Liu, and Hamer 1995;

Zeithaml, Berry and Parasuraman 1993). Another variable included in the element competency

reflects the potential developmental and design capacity a supply partner can provide when a

innovative product does not yet exist and is to be co-developed by the two partners.

The *design competency* variable captures unique assumptions regarding the new supplier

selection problem and the importance of future product or service development, and is reflective

of the current selection criteria and decision process used by more collaborative high-tech

manufacturing industries (Weiss and Heide 1993). Supplier reputation with its three general

elements and twelve supporting variables (See Figure 2.3) is needed by researchers of business-

to-business relationships because of the organizational risk and uncertainty associated with each

supply relationship (Puto, Patton and King 1985). This is especially true for desired long-term

supply relationships, and thus, requires brief summary of risk, uncertainty, and decision analysis.

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Risk and Decision Theory

The total cost of effectively searching and selecting a supply partner for a long-term partnership is rather intimidating. However, the cost of *not* effectively searching and selecting long-term partners can be even more damaging. One construct that describes this tradeoff is risk. Risk can take on many forms such as physical risk, social risk, psychological risk, financial risk, performance risk, and time risk (Chiles and McMackin 1996; MacCrimmon and Wehrung 1986; Roselius and Benton 1971; Keeney and Raiffa 1993).

Risk is described as an often ambiguous and inherently subjective construct by some organizational researchers (Arrow and Raynaud 1986; Chiles and McMackin 1996), and simply as the 'subjective probability for potential loss' by others (MacCrimmon and Wehrung 1986; March and Shapira 1987). Classical decision theorists suggest risk more formally as "the variance of the probability distribution of possible gains and losses associated with a particular alternative" (March and Shapira 1987, page 1404). Risk is most commonly represented by the variance or standard deviation around the mean for a particular item. While risk relates to the *ex-ante* perceived probability of different future outcomes, most attempts at quantification are *ex-post* in nature (Woo 1987).

Decision theorists also consider the paradigm in which an individual, or organization, contemplates a choice of action in an uncertain or risky environment. For an organization searching for either a long-term or short-term supply partner, this uncertain decision environment can be very complex (Anderson and Chambers 1985; Kohli 1989; Krapfel 1985; McQuiston 1989; Qualls and Puto 1989; Stafford 1995; Weber, Current and Benton 1991; Wilson, Lilien and Wilson 1991). Organizations must consider multiple factors while searching, sorting, and

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eventually selecting the most attractive supply partner.

The complexity of the selection problem is illustrated by Ralph Keeney (1982), who summarized a complex decision environment by outlining twelve features that collectively describe this environment. Seven of these twelve features are especially relevant to the selection problem addressed in this research and include; several decision makers, multiple objectives, long-time horizons, risk and uncertainty, difficulty in identifying good alternatives, many impacted groups, difficulty in measuring intangibles, and the sequential nature of decisions. These seven features are very reflective of the supply partner selection process and can be further magnified considering the high opportunity costs of selecting an inappropriate partner.

Current trends in the 'work-team' environment and executive accountability increase the need to justify long-term supply partner selection to others involved in the product or service offering. Interestingly, this may include a manufacturer justifying the selection of a new technologically advanced input supplier to other long-term suppliers who have already heavily invested in their current supply relationship with the manufacturer. The complexity of the new supplier decision process and its associated risks can be further exasperated in the present uncertain, fast paced, global environment. Keeney (1982), however, makes an interesting observation by suggesting that complexity cannot be avoided in the decision making process because it is not only part of the problem, but also part of the solution.

A searching organization may address decision making complexity with two extremes. The first extreme is to formally model this complexity. To accomplish this objective formal model, considerable effort must be expended to; (1) outline the desired supply partnership objectives, (2) identify the relevant attributes of each partner to accomplish these objectives, (3)

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identify all available partners, and (4) measure the individual attributes of each possible candidate, and (5) consider the alternative consequences of each partnership. While this objective, formal decision model is most desirable, capturing all the necessary information would indeed be a very difficult, expensive, and time laden process. The second alternative extreme is to less formally address this complexity by relying exclusively on 'intuition' or 'feel' in the partner selection process. This subjective, informal method is a less cumbersome alternative by requiring less time, effort, and 'immediate' expense.

While the two extremes have been described as objective (formal) and subjective (informal), a point of clarification is needed. One philosophical implication of the two extremes is that all decisions require judgements that are inherently subjective. Stated differently, objective, value-free analysis is not possible nor desirable. However, decision analysis formally considers both objective and subjective data, and then assigns the likelihood of each alternative and their resulting probability and utility (Keeney and Raiffa 1993). Thus, decision analysis can perhaps best be described as a *prescriptive* method while not being exclusively normative in nature.

In summary, there are limitations to the usefulness of both prescriptive and descriptive methods of analysis in assessing business-to-business risk. The most glaring limitation of the more formal, prescriptive method is the lack of decision speed, while the limitation of the less formal, descriptive method is the lack of decision accuracy. This dissertation suggests that the limitations of the two methods can be balanced in the organizational buying business community by including firm reputation as a key decision criteria in the supplier selection process. How supplier reputation and its three elements are used in the three supplier selection process-stages

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developed earlier in this literature review is the focus of the research propositions and hypotheses

to be presented next in Chapter Three.

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CHAPTER 3

RESEARCH HYPOTHESES

Several diverse literatures reviewed in Chapter Two have contributed to the alternative

frameworks and methods in which an organization may utilize supplier reputation when selecting

a new, long-term supplier of technology. The term supplier reputation has been developed in the

business-to-business or industrial supply setting with three elements and twelve supporting

variables derived from several literatures including organizational buying behavior,

informational economics, relationship marketing, and industrial marketing. These separate

bodies of literature, as well as the review of the empirical *Fortune* research, and risk and decision

theory, provide a rich background for the research propositions that follow.

The literature review has revealed that selecting a new supplier for a long-term

relationship can be a difficult and complex decision process. This decision process becomes

even more difficult in organizational buying when the buying situation is for a new task. The

newness of the buying situation, or buying problem, makes the selection process difficult

because the amount of information required is high, and the need to consider many new

alternatives is important (See Table 2.1). Using reputation as a selection process tool allows an

organization to more effectively gather additional information about possible supply partners and

to also consider the potential for higher levels of organizational risk through adverse selection.

This 'selection decision tool' property of reputation is posited to offer efficiencies in resource

allocation during the selection process. The resource allocation efficiencies resulting from the

use of reputation allow minimization of costs when evaluating many different supply partners

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under consideration during the *searching, sorting,* and *selection* process-stages. These resource efficiencies in organizational buying and new supplier selection are hypothesized to result from the application of different simplified decision rules when evaluating supplier reputation as progression is made through the three developed process-stages. Description of organizational buying behavior *'decision rules'* was never offered by Johnston and Lewin (1996), thus, the following four research propositions extend the Johnston and Lewin (1996) organizational buying behavior model by suggesting the existence of simplified decision rules, and by hypothesizing about their possible use during the three supplier selection process-stages outlined in Chapter Two.

These four research propositions will guide specific hypotheses generation regarding the elements of supplier reputation and their interaction within the three supplier selection process-stages. The four guiding research propositions are as follows:

Guiding Propositions

P1: Different *decision rules* will be used during the searching, sorting, and selection process-stages.

P2: *Attribute* elements of supplier reputation will be greater in importance during the *Searching* process-stage.

P3: *Behavior* elements of supplier reputation will be greater in importance during the *Sorting* process-stage.

P4: *Competency* elements of supplier reputation will be greater in importance during the *Selection* process-stage.

These four guiding research propositions are intended to offer specific decision rules regarding

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the use of reputation in organizational buyer behavior and supplier selection. From these four research propositions flow twelve specific hypotheses that specify the relationships between the three elements of reputation and the three process-stages. The first proposition (P1) however, does not generate any of the twelve specific hypotheses, but is the guiding proposition that theoretically grounds this dissertation to previous models of organizational buying behavior. As stated in Chapter Two, the amount of information and resources required is expected to increase for each advancement in process-stage.

These four unobservable propositions are deductively connected to allow empirical generalizations of the proposed three stage model. The last three propositions (P2, P3, P4) support the first proposition (P1), and are from which the twelve specific research hypotheses are generated. A summary of the theoretical framework with the twelve supporting variables is offered in Table 3.1, and Table 3.2. Three of the twelve specific hypotheses can be generated from research proposition P2 and are in the 1st observed cell in Table 3.1. The first cell in Table 3.2 includes the attribute element of supplier reputation from Table 3.1, but lists individually its three supporting variables of financial stability, managerial stability, and size. The relationships outlined in P2 and pictured as the top left cell in Tables 3.1 and 3.2, are formalized in the following three searching and attribute hypotheses.

Searching and Attribute Hypotheses

H1: The reputation attribute *financial stability* will be greater in importance during the *searching* process-stage.

H2: The reputation attribute *managerial stability* will be greater in importance during the

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searching process-stage.

H3: The reputation attribute *size* will be greater in importance during the *searching* process-stage.

The next four hypotheses are generated from research proposition P3, which includes the behavior element of supplier reputation and the sorting process-stage. The relationship outlined in P3 and pictured as the middle cell in Tables 3.1 and 3.2, are formalized in the following four sorting and behavior hypotheses.

Sorting and Behavior Hypotheses

H4: The reputation behavior *commitment* will be greater in importance during the *sorting* process-stage.

H5: The reputation behavior *cooperation* will be greater in importance during the *sorting* process-stage.

H6: The reputation behavior *innovative* will be greater in importance during the *sorting* process-stage.

H7: The reputation behavior *trustworthy* will be greater in importance during the *sorting* process-stage.

The final five hypotheses are generated from research proposition P4, which includes the competency element of supplier reputation and the selection process-stage. The relationship outlined in P4 and pictured as the lower right cell in Tables 3.1 and 3.2, are formalized in the following five competency and selection hypotheses.

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Competency and Selection Hypotheses

H8: The reputation competency *cost* will be greater in importance during the *selection* process-stage.

H9: The reputation competency *delivery* will be greater in importance during the *selection* process-stage.

H10: The reputation competency *design* will be greater in importance during the *selection* process-stage.

H11: The reputation competency *quality* will be greater in importance during the *selection* process-stage.

H12: The reputation competency *service* will be greater in importance during the *selection* process-stage.

These twelve hypotheses are consistent with the definition of supplier reputation developed

earlier in this dissertation, and capture the previous literatures contribution regarding

organizational buying behavior for new task objectives, and the context specific refinements

developed thus far regarding the supplier selection decision process (See Tables 2.1, 2.2, 3.1, and

3.2, and Figures 2.1, 2.2,

and 2.3).

From the supporting logic of the four guiding propositions and twelve specific

hypotheses proposed, flow the 'decision rules' suggested to exist as a new construct in the

Johnston and Lewin (1996) organizational buying behavior model. The supporting logic for the

four propositions and twelve hypotheses also flows from the increasing cost of acquiring the

needed information to make a strategic supply partner selection, and the resulting organizational

risk assumed while making this decision. Additionally, there is an anticipated resource

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efficiency in using reputation to obtain the needed information about possible alternative supply partners. For example, the cost of acquiring information about the organizational *attribute* of size, would be significantly lower than the cost of acquiring information about the organizational *behavior* of trustworthiness. There is an expected difference, although less dramatic, in the anticipated cost of acquiring information about the organizational *behavior* such as trustworthiness, and the *competency* of service. Nevertheless, the increasing cost of acquiring the required organizational information to evaluate each of the three reputational elements support the twelve hypotheses and three proposed process-stages.

This implicit supporting logic in P1 drives the expected increase in importance for the searching, sorting, and selection process-stages. While this notion has not been directly linked to the existing organizational buying literature, one of this dissertations contributions is to confirm or deny the expectation regarding the increasing cost of acquiring necessary information about the reputation of a potential partner. While there are no hypotheses generated to explicitly examine increasing or decreasing cost, an increasing importance of the three process-stages confirms the expected relationship, while a decreasing importance of the three process-stages will deny the expected relationship. The importance placed on the three process-stages (P1), the three elements of reputation (P2, P3, P4), and the twelve supporting variables (H1-H12) is now an empirical question. This empirical question is important theoretically due to the introduction of the new construct of decision rules in a recent model of organizational buying behavior (Johnston and Lewin 1996) without suggesting the constructs properties, and/or use during different stages of organizational buying. The practical and theoretical importance of this empirical question has been gradually developed in this research from recent trends in

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organizational buying and the organizational buying behavior literature, and is reflective of the

descriptive and exploratory focus of the supplier selection survey described next in Chapter Four.

CHAPTER 4

RESEARCH METHODOLOGY

The previous three chapters of this dissertation introduced the relevance of this new

supplier selection or business-to-business research problem, reviewed the existing literature and

refined the organizational buying process into three process-stages, offered a definition of

supplier reputation, proposed guiding research propositions, and developed specific hypotheses

relevant to reputation and the problem of new supplier selection. The present chapter outlines a

descriptive research method that includes an industrial field study designed to examine the four

propositions and twelve hypotheses introduced in Chapter Three. There is an additional

exploratory component of this research that will be outlined after first describing the primary

descriptive component.

Testing the twelve hypotheses summarized in Table 4.1 will lead to better understanding

of the supplier selection process, and specifically lead to better understanding of how reputation

is used in the process of selecting a new, long-term supplier of technology. To determine the

relative importance and use of the three elements of reputation during the different process-

stages, a field survey was designed and conducted. This survey is cross-sectional in relevance to

time, and is designed to capture the supplier selection decision making process for purchasing

managers and personnel, senior level managers, vice presidents, and executives involved in this

strategic level of decision making. Measurement of this decision process consists of rules for

"assigning numbers to objects in such a way as to represent quantities of attributes" (Nunnally

1978, pg. 3). This description of measurement by Nunnally will be the guide in assigning

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numbers to decision rules for the three process-stages, elements, and supporting variables inferred from the field survey importance scores.

Field Interviews and Survey Design

First, field interviews were conducted with business executives in the Midwest to validate the relevance of the topic and to develop the supplier selection survey. Eleven interviews were conducted over the summer of 1996 and included the firms Avery Dennison, Caterpillar, Case IH, Cybertek, Deere & Company, GSI, Inland Steel, Lopax, Monsanto, W.W. Grainger, and Vesuvius Americas. The information gathered from these eleven interviews varied from general comments about the importance of strategic supply relationships for future competitiveness of their firm, to invaluable executive level feedback related to the existence and use of three process-stages in current selection procedures. Another goal of these interviews was to gather preliminary information and feedback that would preclude survey questions which could prove to be peripheral or tangential to the objectives of this dissertation. As with many busy executives, time was often the main constraint influencing the degree of feedback provided.

Based upon the literature review, research propositions, specific hypotheses, and feedback from field interviews, the final draft of the field survey was created during the fall of 1996 (Appendix A). The final sampling frame was determined by executive feedback, which pointed to senior level purchasing personnel as the most appropriate target for response due to the focus of this research, and most apt to respond in a timely manner. Several executives commonly described these senior purchasing personnel as being critical in bringing the right

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potential supply partners "to the table" based upon strategic directives given by the executives.[5]

Based upon this executive feedback, a purposive sample of purchasing professionals was

determined the most appropriate population frame for this supplier selection research. A

nonprobability sampling method (Chaudhuri and Stenger 1992; Rea and Parker 1992; Sudman

1976) resulted in the specific target sample of the central Illinois chapter of the National

Association of Purchasing Professionals (NAPM).

Within this target group, it was anticipated that various levels of influence and decision

making authority would exist. Based upon informal discussions the author had with current

NAPM members at a monthly chapter meeting and plant tour in November of 1996, it was

determined that executive level management would be a small percentage of the central Illinois

NAPM membership. Because of the resulting difficulty in identifying appropriate NAPM

respondents with executive level decision making ability, a snowball sampling method

supplemented the NAPM data collection (Goodman 1961). Snowball sampling is often

described as the referral method, in which appropriate respondents are identified by the current

respondent. This supplemental 'referral method' allows efficient identification of executive level

or senior level decision makers actively involved in this strategic level of supplier selection.

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[5] One senior executive described the recent selection of a new key supplier as a scenario where the purchasing manager was directed to lead a 'cross-functional team' comprised of the respective departments most directly influenced by the selection of a new supplier. The team then conducted the investigation and/or research on potential suppliers based upon criteria pre-specified by the executive and team members. The team then proposed the most preferred supply partner, out of the top three, to the senior executive for final discussion and approval.

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Survey Pre-Testing

Prior to mailing to the central Illinois NAPM chapter membership, the survey was pre-tested by ten purchasing professionals at NACCO Materials Handling Group in Danville, Illinois. The pre-test resulted in ten completed surveys, of which eight were included in the analysis after comparisons of mean important score differences with the NAPM mailing (Rossi, Wright, and Anderson 1983). However, comments from these ten NACCO respondents resulted in the addition of two demographic variables; gender, and whether the respondent was a certified purchasing manager (C.P.M.). The C.P.M. classification is a professional certification award that may be obtained by a purchasing and materials professional after a series of four exams, and at least five years experience. The C.P.M. designation communicates a standard level of competence in the field of purchasing and materials management and is regarded highly within the purchasing profession.

After mailing 156 surveys to the central Illinois NAPM membership, respondents completed a survey that outlines a situation requiring the selection of a new, long-term supply partner who would be technologically advanced and instrumental in the future success of the company. Each of the NAPM members received a personal letter from a long-standing and respected chapter member who requested their support (Appendix B). Even if the respondent had not recently faced the strategic decision of selecting a new supplier of technology, the field survey describes a hypothetical scenario in which the respondents are asked to consider the supplier selection process, and subsequent selection decisions framed in this research (See Appendix A for a reproduction of the complete mail survey).

The core of the survey asked respondents to rate the twelve reputational support variables

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in each of the three process-stages. This core component of the survey used a bipolar adjective scale of one to seven, with one being anchored by somewhat important, and seven being anchored by extremely important (Aaker and Day 1986; Lehmann 1989; Nunally 1978). These ratings were completed for each of the twelve variables within the three hypothesized process-stages of searching, sorting, and selection. Weights were then attached to the three process-stages by posing an allocation question that asks the respondents to distribute $100 to the three process-stages. Additional demographic data was also collected regarding respondents level of experience, type of purchasing concentration, size of their firm (measured in both sales volume and number of employees), and the desired size of the new supply partner. The two additional demographic items generated from the NACCO pre-test, gender and whether they were a certified purchasing manager (C.P.M.), were added for the NAPM mailing and included in the subsequent demographic analysis. Because of the exploratory nature of the new construct "supplier reputation" and the simplified decision rule framework proposed in Chapter Three, respondents were encouraged to include additional written feedback at the end of the mail survey to assist the researcher in the posed supplier selection question.

Analysis of Survey Data

To provide early interpretation of the survey results, simple frequency and percent for respondents according to the demographic categories will be conducted. Next, analysis of mean values of the bipolar importance scores, with accompanying standard deviations and relative rankings with the other supporting variables will be completed in each process-stage. The twelve supporting variables are described as general characteristics in the mail survey, and will be

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referred to for the rest of this dissertation as either characteristics *and/or* support variables. In addition to calculating a _column_ mean for importance scores in each single process-stage (e.g., all twelve supporting variables/characteristics are combined in the searching process-stage for a single process-stage mean), a combined three process-stage _row_ mean for importance scores will also be calculated individually for each of the twelve supporting variables/characteristics.

Next, factor analysis, considered one of the more popular analysis of interdependence techniques (Churchill 1995), will be performed to provide substantive interpretation of the relationships between the three hypothesized elements of reputation, twelve supporting variables, and three process-stages. The secondary purpose for using factor analysis, data reduction and summary, will consider the evidence regarding the number of elements, process-stages, or general characteristics of the reputation construct.

The hypothesized relationship between the elements of reputation, and three process-stages will then be tested for statistical significance. Statistical significance will be based on the expected mean importance values in the referent process-stages being significantly higher than the mean importance values from the remaining two process-stages. For a review, Table 4.1 offers the hypothesized relationships between the twelve general characteristics and three process-stages with each predicted relationship.

To test the '*a priori*' hypotheses, a paired sample t-test was then used to test for differences in mean importance values between the three different elements of reputation and the three process-stages. For example, the H1 null hypothesis was that the expected importance mean for the attribute financial stability in the searching process-stage, will be equal to the importance mean for the attribute financial stability in the sorting (H1a) and selection (H1b)

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process-stages. The remaining eleven null hypotheses, contrary to the research or alternate hypotheses suggested in Table 4.1, will follow in a similar manner with the hypothesized characteristic mean importance value of the referent cell being equal to the mean importance value in the remaining two process-stage cells.

The survey data importance scale will then be recalibrated to indicate relative scores. This recalibration or indexing will allow the computation of a difference index for each element of reputation and the twelve supporting variables to highlight extreme cases, and to quickly indicate the difference between characteristics rated important and less important for each process-stage. This indexing will also allow analysis of increasing or decreasing importance trends by individual variables across the three process-stages, which will further illuminate the underlying structure to the directional relationships for the three elements and process-stages.

Finally, additional demographic analysis will be conducted. This additional demographic analysis compares differences in importance scores from the survey data which offers categorical information about respondents based on level of experience, gender, C.P.M. certification, and purchasing type. All of the statistical analysis, with the exception of difference scores, was conducted with the assistance of the software package SPSS, version 7.0 for windows (SPSS, 1995). The research results described in the present methodology chapter are presented in Chapter Five.

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CHAPTER 5

RESEARCH RESULTS

Mailing surveys to the 156 central Illinois NAPM chapter membership and subsequent

follow-up procedures (Rossi, Wright, and Anderson 1983), resulted in 81 survey responses for an

initial response rate of 52%. Of the 81 initial responses, 75 surveys were deemed acceptable for

analysis and resulted in a usable response rate of 48%. During survey construction and design,

particular attention was given to the length (Herzog and Bachman 1981), appearance (Jobber

1989), type of question (Sudman and Bradburn 1983), and the appropriate use of a cover letter

(Walker, Kirchmann, and Conant 1987) to improve the overall survey quality and response rate.

Comparisons were made between the responses received prior to the execution of follow-up

procedures as well as those responses gathered during the pre-test, to examine for the possibility

of non-sampling error (Chaudhuri and Stenger 1992). Pre-testing the survey was conducted with

twelve respondents (ten NACCO and two executives), of which ten were acceptable for analysis.

The 75 acceptable surveys from the NAPM and the 10 acceptable pre-test surveys, resulted in 85

usable surveys and an overall response rate of 51% (168/85).

Demographic Profile of Respondents

Based on response frequency and percent for the target sample of purchasing

professionals, demographic characteristics of the 85 respondents could be generalized as

predominantly male, not C.P.M. certified, having primary purchasing responsibility in

production materials or in multiple areas, and having professional experience at the level of a

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senior buyer or purchasing and materials manager. Table 5.1 provides the frequency distributions from which the above generalization was gleaned, and allows a more detailed break down of the individual demographic characteristics. It is worth noting that Table 5.1 includes an unspecified response category for gender and C.P.M. certification. This additional response category is needed to account for the eight usable pre-test survey responses gathered before the inclusion of these two additional demographic variables to the supplier selection survey (Appendix A). Statistical analysis of the demographic variables influence upon mean importance scores in each of the three process-stages is described in detail in Chapter Six.

Averages from some of the demographic categories is provided in Table 5.2, and outlines a typical respondent as belonging to a fairly large firm. The average size in annual sales for a typical respondents' firm would be 5.3 billion dollars, while the average number of employees for that same typical respondents' firm would be 17,228 people (Table 5.2). This average firm size result for NAPM respondents is fairly reflective of the industrial nature of central Illinois, which has a base of agricultural production and processing, and a significant presence in industrial manufacturing. The number of respondents offering information about their own firms annual sales and number of employees decreased from 85, to 66 and 77 respectively (Table 5.2). This decrease in response rate is not surprising due to the potential sensitivity, or imperfect knowledge, by respondents and was placed at the end of the survey to decrease non-response (Sudman and Bradburn 1983). A very dramatic decrease from 85, to 40 and 36 respectively (Table 5.2), was observed in the following two questions regarding the *desired* size of the new supply partner. In response to these two questions regarding the *desired* annual sales and *desired* number of employees, the average in annual sales dropped to 95.4 million, and the average

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number of employees dropped to 485 respectively.

The dramatic decrease in the number of responses to questions regarding the *desired* size of a new supply partner was specifically noted in many of the surveys by written comments from non-respondents. These comments often included the notation "not important," or "would not consider size a criteria," and even one particularly frank respondent who commented "who cares." Thus, the dramatic lower average in the *desired* size of new supply partner must be evaluated with caution due to the written comments by non-respondents, and the particular decision frame posed in the supplier selection survey. Again, this organizational buying behavior decision frame (Appendix A) presented a hypothetical scenario in which a managerial decision was needed in selecting a new supply partner to co-develop a new, innovative product for which the details are not known. This supplier is also to be the primary provider of technology critical to the development of this new product. Thus, even with the cautions just mentioned regarding the lower response rate and written comments by non-respondents, one possible explanation for the large decrease in the desired size for a new supply partner is that the desired supplier is providing new technology. This profile of a new, technologically advanced supplier may tend to invoke images of a smaller, more specialized, and more entrepreneurial firm which would tend to differ in organizational structure and size (Tapscott 1996).

Descriptive Analysis

As the data was intervally scaled, the mean scores for the ratings of importance, the standard deviations for the rating scores, and relative rankings of the twelve reputation

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characteristics were calculated by process-stage[6] and are provided in Table 5.3. These early

descriptive results show several consistent rating and ranking scores for several of the twelve

characteristics. Quality is rated the highest, and is ranked number one across all three process-

stages. On the other extreme, the characteristics managerial stability and size were consistently

rated the second lowest and lowest by purchasing professionals, and ranked number eleven and

number twelve across all three process-stages. The high mean importance scores for the quality

characteristic is supportive of previous studies examining supplier selection criteria by Lehmann

and O'Shaughnessy (1982), and Wilson (1994).

Many of the remaining nine support variables appear to change in rating and ranking

(Table 5.3). There appears to be considerable "movement around the middle" of eight

characteristics after the top ranking is anchored by quality, and the bottom rankings are anchored

by size, and managerial stability. This result of "movement around the middle" is supportive of

previous research suggesting that individual choice with multiple options can result in clarity

when identifying the most preferred and least preferred, but less clarity in the ratings of those

options in the middle (Moore and Lehman 1982; 1989).

The overall column mean importance scores for the searching, sorting and selection

process-stages is provided in Table 5.4. The column mean importance score based upon the

average for all twelve characteristics is 4.51 in searching, 5.20 in sorting, and 5.82 in selection.

As predicted, increasing importance of mean scores occurs as progress is made across the three

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[6] The relative ranking was based on mean importance rating scores from each process-stage. In other words, there was no survey question explicitly asking for this information independent of the individual ratings offered in each cell.

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process-stages. However, the dramatic increase in mean importance scores seen in Table 5.4 was not anticipated. These increasing average process-stage importance scores are supported further by another survey question that asks respondents to allocate limited resources between the three process-stages. In this question (See Appendix A) respondents were asked to allocate $100 to the entire selection process. This $100 was considered to measure both time and money for the purchasing professional responding to the survey.

This separate resource allocation question resulted in a mean allocation of 25.35 dollars for the searching process-stage, a mean allocation of 29.04 dollars for the sorting process-stage, and a mean allocation of 45.55 dollars for the selection process-stage (Table 5.5). The increasing resource allocation scores reported by process-stage in Table 5.5 (i.e., Selection > Sorting > Searching), support the increasing individual process-stage mean importance scores given by respondents on all twelve characteristics in Table 5.4. These two findings strongly reinforce the earlier prediction that reputational characteristics will increase in importance as progression is made through the three process-stages.

The combined row mean rating scores for each of the twelve individual reputation characteristics and their combined rankings is provided in Table 5.6. From this table it is clear that competency is the element of reputation rated most important across the three process-stages. The competency elements in descending order are: #1 quality (6.20), #2 service (5.65), #3 design competency (5.60), #4 delivery competency (5.55), and #10 cost (4.94). According to mean rating scores in Table 5.6, the second most important element of reputation would be behaviors; and in descending order these are: #5 trustworthy (5.48), #6 innovative (5.44), #7 cooperative (5.36), and #9 commitment (5.18). The least important element of reputation

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according to mean rating scores is attributes; and in descending order are: #8 financial stability (5.35), #11 managerial stability (4.59), and #12 size (2.79). Cost is the only support variable that did not group consistently with its reputational elements. This result may be explained by the supplier selection decision frame posed in this research. More specifically, the non-existence of a current product or service in the supplier selection problem posed in this research would tend to increase the relative importance of other decision support variables. Another interesting finding of this research is the clear grouping, with the exception of the previously mentioned variable of cost, of the three elements of reputation by mean importance scores. While there is general support for the distinct segregation of the three proposed elements of reputation based upon mean importance score ratings and their relative rankings, factor analysis was conducted to examine the survey data structure further.

Factor Analysis

Before considering the specific exploratory factor analysis procedure employed and presenting the results, it is important to review the theoretical rationale supporting the application of this method. This review is due in part to the cautions put forth by several methodological scholars, one of whom professes: "exploratory factor analysis is *not*, nor should be, a blind process in which all manner of variables or items are thrown into a factor-analytic 'grinder' in the expectation that something meaningful will emerge. The aphorism GIGO (Garbage In, Garbage Out) is probably nowhere more evident than in application of factor analysis aimed at seeing what will happen or what will emerge" (Pedhazur and Schmelkin 1991, page 591). Thus, a brief review of the theoretical rationale, or prediction as to the emergence of three elements of

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reputation from exploratory factor analysis is appropriate.

In the literature review, three elements of reputation were developed; ATTRIBUTES which is supported by three variables (Financial Stability, Managerial Stability, and Size), BEHAVIORS which is supported by four variables (Commitment, Cooperative, Innovative, and Trustworthy), and COMPETENCIES which is supported by five variables (Cost, Design, Delivery, Quality, and Service). The purpose of conducting exploratory factor analysis is to group variables together that are highly correlated, and to see if the theoretical structure posited by the three elements of reputation is in fact underlying the survey data structure.

This factor analytic method allows the three elements of reputation and twelve supporting variables equal status during the three process-stages of analysis. The focus is then placed upon the full set of relationships in anticipation of capturing the multivariate interdependencies among the various elements, supporting variables, and process-stages. Conceptually this method offers a helpful measure of how the three elements of reputation and the twelve supporting variables differ or covary due to the pairwise correlations---without indicating size or magnitude of the difference---according to the underlying theoretical structure proposed (Stewart 1981). Emphasis will be given in describing key decisions when factor-analyzing the survey data because the 'interdependence study' of exploratory factor analysis method considers each supporting variable and element of reputation without prior assignment of elemental process-stage dependence, or groupings (Churchill 1995; Stewart 1981).

The earlier cautions put forth by Pedhazur and Schmelkin (1991) introduced a general methodological concern of whether it is appropriate for factor analysis to even be applied to data in general. With the present research's grounding in theoretical rationale and structure, it is

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appropriate to take the first tentative step in exploratory factor analysis and generate a correlation matrix of the survey data to test for possible homogeneity of items. To test for possible homogeneity, bivariate 'Pearson' correlations matrix among the twelve supporting variables was generated by process-stages and is provided in Tables 5.7, 5.8, and 5.9. If the Pearson correlation was statistically significant, it was flagged with one asterisk at the .05 level, and with two asterisks at the .01 level. Because a pattern of low correlations throughout the matrix was not seen in any of the three initial process-stage correlation tables, the matrix is then deemed appropriate for factoring (Churchill 1995; Pedhazur and Schmelkin 1991).

An early output value of particular interest in exploratory factor analysis is the reported value of Bartlett's Test of Sphericity. This general protection procedure will test the null hypothesis that the correlation matrix being factored is simply an identity matrix. Each of the Bartlett's Test of Sphericity values from each of the three output tables reject the null hypothesis (See Tables 5.10, 5.11, and 5.12 for the individual Bartlett's Test of Sphericity values by process-stage), and thus allow further examination of the factor analysis results without the threat of an inappropriate matrix (Pedhazur and Schmelkin 1991; Stewart 1981).

Variable-by-variable exploratory factor analysis was then performed to determine which of the twelve supporting variables tend to go together. The principal component method of extraction was used, with the criteria for extraction being set at eigenvalues in excess of 1. To handle missing values in the data, a listwise method of deleting items was used. Because the literature suggested the multidimensional nature of supplier reputation and its assumed intercorrelation, the orthogonal varimax rotation was specified with the maximum iterations for convergence being set at 15. The resulting factor-loadings for each of the three process-stages is

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provided in Tables 5.10, 5.11, and 5.12.

Several interesting patterns emerge from the factor loading results across process-stages. First, the principal component method extracted three factors in the sorting and selection process-stages, and extracted four factors in the searching process-stage according to the factor extraction rule being set at eigenvalues in excess of 1. Second, there is a clear grouping of the attribute element and three supporting variables into one factor, which is impressively consistent across the three process stages. Exceptions are in the selection process-stage when financial stability could possibly be grouped with either factor one or three, and in the sorting process-stage when trustworthiness is included within the factor loading that contains the three attribute elements. Third, two behaviors (communication, cooperation) and two competencies (quality, service) were consistently loaded on the same factor across all three process-stages. Fourth, the competency cost variable was only grouped with delivery in the searching process-stage, and was loaded as a separate factor in the sorting and selection process-stages. This reinforces an earlier descriptive finding that cost is the only exception within the competency element in consistently falling out of accordance in mean score rating or ranking with other competency variables.

Comparing the theoretical structure and factor loadings results from Tables 5.10, 5.11, and 5.12, brings attention to the rather consistent pattern of factor loadings in the sorting and selection process-stages. Table 5.13 summarizes factor loading groupings without giving the individual factor value, communality, and other details from the factor analysis to allow a visual map of the factor analytic groupings by process-stage. With the exception of cost in all process-stages, and trustworthiness in the sorting process-stage, behaviors and competencies tended to load into the same factor (Table 5.13). This consistent pattern could be the result of the

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respondents rating the twelve variables in the three process-stages at the same time period due to the cross-sectional survey design. A more longitudinal survey measurement may have more clearly segregated the hypothesized differences between the sorting and selection process-stages. Another possible explanation for this result could be the less dramatic differences in anticipated cost of acquiring information regarding behaviors and competency, in contrast with the more dramatic differences between attributes and behaviors, and attributes and competency (Chapter Two).

In sum, these factor analytic results are an interesting finding due to the absence of a theoretical argument in the present organizational buyer behavior literature regarding the existence of distinct process-stages, and/or sequential progression through each stage. While the results of this exploratory factor analysis does not offer substantive proof of respondents combining the sorting and selection process-stages, nor for respondents being unable to denote the differences between behavior and competency support variables, there is clear similarity in the pattern of factor loadings for the elements of behavior and competency during the sorting and searching process-stages. One possible explanation could be due to the methodological constraint of employing a cross-sectional survey, while another possible explanation could be that the behaviors and competencies elements of reputation have no clear theoretical delineation. However, the earlier descriptive analysis would tend to suggest otherwise due to the sequential and consistent pattern of elemental grouping by mean importance scores (Table 5.6). Yet another possible contributing factor could be the possible non-existence of three distinct process-stages when selecting a supplier of this unique type.

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Hypotheses Testing

To test the "*a priori*" hypotheses proposed in this research, a method of testing several means is required. The basic question of whether the mean importance score for one element of reputation in one process-stage differs from the mean importance scores in another process-stage, underlies the formal structure of the twelve hypotheses. This rationale and formal structure leads to the following statistical test. To compare the two mean importance scores, a paired sample t-test will be used to see if the average change in mean importance across process-stages is different from zero. For the first three hypotheses, the mean score for the attribute elements of reputation will be compared separately across the three process-stages. More specifically, in hypothesis 1a the mean importance score for the attribute financial stability is expected to be greater in the searching process-stage, than the mean importance score for the attribute financial stability in the sorting process-stage (See Table 4.1 for a review of the twelve hypotheses). In hypothesis 1b, the mean importance score for the attribute financial stability is expected to be greater in the searching process-stage, than the mean importance score for the attribute financial stability in the selection process-stage. The remaining eleven hypotheses, each with their corresponding a and b components, will follow in the same manner (Table 4.1).

Table 5.14 gives a summary of the results for hypotheses 1a and 1b. On the top portion of Table 5.14, is the paired statistics and correlations, while the detailed results of the paired sample t-test are presented on the lower portion of the table. In the first hypothesis, there are two individual comparisons made in H1a and H1b, and are labeled as Pair 1 and Pair 2 in Table 5.14. The two paired sample t-tests of mean importance scores is performed when the searching process-stage is compared with the sorting process-stage (1st paired comparison), and the

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searching process-stage is compared with the selection process-stage (2nd paired comparison).

For each of the paired sample t-tests, missing data in the survey was excluded analysis-by-analysis, and a confidence interval of 99% was used. This more conservative confidence interval is due to the multiple paired comparisons required to test the a and b components of the twelve hypotheses (Johnson and Wichern 1992). Although there is a long-standing methodological debate regarding the issue of confidence interval selection, as well as many other issues in statistical analysis, the general rule-of-thumb is to divide the confidence interval with the number of variables used in the comparison (Johnson and Wichern 1992). Dividing the standard .05 confidence interval by the three mean importance scores used in the paired t-tests gives us the more appropriate confidence interval for testing the twelve hypotheses (.05/3 = 1.67). Standard practice in statistical methods and data presentation suggests converting the 98.33% (100 - 1.67) confidence interval to 99% for ease in interpreting research results.

Table 5.15 gives the results of the paired sample t-test for hypotheses 2a, and 2b, while Table 5.16 gives the results of the paired sample t-test for hypotheses 3a, and 3b. For each of the three attribute variables of financial stability, managerial stability, and size, the null hypotheses of no significant difference in mean importance scores was rejected. However, there is no directional support for the attribute mean importance scores to be greater in the searching process-stage or referent cell, than in the sorting process-stage and selection process-stage.

Tables 5.17, 5.18, 5.19, and 5.20, give the results of the paired sample t-test for the behavioral elements of reputation and relate to hypotheses 4a and 4b, 5a and 5b, 6a and 6b, and 7a and 7b. Similar to the three attribute variables, there is significant differences in the mean importance scores across process-stages. However, in each of the four behavioral elements there

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is directional support for the a component or 1st paired comparison of the hypotheses. This a component—labeled Pair 1—compares the mean importance scores of the sorting process-stage with the searching process-stage. In the b component of the hypotheses (labeled Pair 2) there is significant difference, but no directional support, for the 2nd paired comparison of the sorting process-stage with the selection process-stage. There is a pattern in Tables 5.17, 5.18, 5.19, and 5.20, for the a component—Pair 1—of the four behavioral hypotheses to be significant, but not directional. While the same pattern in Tables 5.17, 5.18, 5.19, and 5.20, shows the b component--Pair 2—of the four behavioral hypotheses to be significant, and in the predicted direction.

Tables 5.21, 5.22, 5.23, 5.24, and 5.25, give the results of the paired sample t-test for the competency elements of reputation and relate to hypotheses 8a and 8b, 9a and 9b, 10a and 10b, 11a and 11b, and 12a and 12b. As in the three attribute elements and four behavioral elements, there is also significant difference in the mean importance scores across process-stages for the five competency elements of reputation. Competency variables show directional support for the a component of the 1st paired comparison between the selection process-stage and the searching process-stage, and also for the b component of the 2nd paired comparison between the selection process-stage with the sorting process-stage. There is a pattern of consistent statistical significance and directional support for both the a and b components of the competency hypotheses.

Table 5.26 summarizes the results of the t values for each of the twelve hypotheses. The t value is reported to signify statistical significance in Table 5.26, and is positive when there is directional support, and negative when there is no directional support. Table 5.26 summarizes visually the apparent pattern shown in the element-by-element results from the paired t-tests for

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the twelve hypotheses. From this table it can be reported that all three attribute hypotheses (H1, H2, and H3) are not supported, all four behavior hypotheses (H4, H5, H6, and H7) are partially supported in the 1st comparison (a component), and the five competency hypotheses (H8, H9, H10, H11, H12) are fully supported by both the 1st and 2nd comparison (both a and b components).

The t value summary in Table 5.26 is also reflective of the increasing mean importance scores described earlier in the descriptive analysis. In fact, Table 5.3 shows no violation for any of the twelve characteristics in the importance mean scores increasing as progression is made from the searching, sorting, and selection process-stages. Additional credence to this increasing importance reported in Table 5.3, is reflected by mean importance scores for the three searching, sorting, and selection process-stages reported in Table 5.4, and is also reflected by results of the resource allocation question reported in Table 5.5. The earlier descriptive data analysis and elemental result pattern from the hypotheses suggest a possible data bias, or stage effect, dominating the survey data and subsequent research results.

To properly address the stage bias in the survey results is a rather complex issue. First, the change in mean importance scores across process-stages is a reflection of survey results from the resource allocation question (Table 5.5 for the results of this question, and Appendix A for the survey question itself). In other words, this bias and/or stage effect is one of the most powerful and interesting results of this empirical study, and could be argued as one of the primary objectives of this research. Possible *decision rules* regarding the three elements of reputation that emerged from this survey data offers empirical support regarding organizational buying behavior for firms searching, sorting, and selecting a new, long-term supplier. To

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remove the 'main effect' of the research data could void one of the main purposes of this organizational buying behavior study, and endanger construct validity. However, additional analysis can be conducted without challenging the predictive validity of the "*a priori*" hypotheses testing just completed.

Difference Scores

Further analysis of the survey data scores requires that the importance score averages be recalibrated or indexed to indicate relative scores. This recalibration or indexing will allow the computation of a difference index for each of the searching, sorting, and selection process-stages (Lehmann 1989). The difference scores for each of the twelve supporting variables is reported by process-stage in Table 5.27. These individual difference scores are simply the individual mean importance score in each cell reported in Table 5.3, minus the average of all twelve characteristics (or process-stage mean score) reported in Table 5.4. Calculation of these difference index scores allows the twelve characteristic to be evaluated according to process-stage by highlighting extreme cases and quickly indicating the difference (by process-stage) between characteristics rated important and less important. Table 5.27 also includes an additional column for assigning a trend sign of increasing or decreasing importance as reflected by the individual variable difference scores across the process-stages. This trend sign is intended to further illuminate the underlying structure and directional relationships for elements and process-stages.

Table 5.27 shows several apparent findings from earlier descriptive analysis, such as the low mean score for the characteristic size, and the high mean score for the characteristic quality.

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Perhaps the most interesting finding in Table 5.27, is the ability to assign a trend sign of either positive or negative to eleven of the twelve characteristics. With the exception of managerial stability, each characteristic shows a monotonic or linear relationship after indexing by process-stage. To demonstrate another dimension of support for the hypotheses developed in earlier chapters, attributes would be expected to have a negative trend sign (showing decreasing importance), and competencies would be expected to have a positive sign (showing increasing importance). Behaviors on the other hand, would be expected to show no linear trend, but rather a concave, quadratic relationship.

To capture the predicted relationships, the twelve characteristics should also be indexed element by element to compare across process-stages. The results of elemental indexing by attributes, behaviors, and competencies is provided in Table 5.28, and were calculated by the following method. Each elemental mean was calculated and then subtracted from the relevant individual cell scores. This gives each characteristic a value that is adjusted, or indexed, by its own elemental mean. The results of this elemental indexing shows some change for several variables in the directional trend signs. However, no change is seen in any of the five competency variables, with cost and delivery being consistently positive, and design, quality, and service being consistently negative.

Table 5.29 shows the results of using this 'process-stage only' elemental indexing without consideration of all twelve variables collectively. This table was calculated by taking the elemental mean from each process stage and subtracting the average of the two other elemental means. For example, the attribute row was calculated by taking the mean score from the three attributes in each process-stage, and then subtracting the mean scores derived from the average of

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the four behaviors and five competencies from each process-stage. The remaining behavior and competency rows were calculated in the same manner by taking their own respective mean, and subtracting the average of the two means from the remaining two process-stages. The result of this analysis suggests that after indexing by element and by process-stage, the attribute element is continuing to demonstrate a negative trend sign as hypothesized. The other two elements, behavior and competency, are not showing the predicted trend signs of curve-linear and concave for behavior, and positive for competency as hypothesized. The use of indexing has strengthened the existence and hypothesized relationship of the attribute elements while calling into question the hypothesized relationship of behavior and competency elements.

CHAPTER 6

ADDITIONAL DEMOGRAPHIC COMPARISONS

Additional demographic analysis was conducted by comparing the mean importance scores according to the available classifications from the survey data on the level of experience, gender, C.P.M. certification, and purchasing type. Prior to presenting the results from this additional demographic analysis, a caution is in order regarding the differences in mean scores to be reported. First, many of the categories with reported mean scores have very few responses in each cell, and must be viewed with extreme caution. Second, there were no hypotheses generated prior to the demographic analysis and thus, the information presented in this chapter is only intended to further explore differences and similarities in the survey respondents. In other words, these results are not intended to imply any prior predictions about differences that unfold. Finally, no attempts are made to explain the results presented in this chapter, and are primarily presented because the results are interesting, and could potentially improve the research effectiveness of others interested in organizational buyer behavior and supplier selection research.

The level of experience reported by survey respondents included seven 'degrees of experience' in which respondents could categorize their own professional experience level. These seven categories included less than one year of experience, secretary with buying responsibility, assistant buyer, senior buyer, supervisor, purchasing or materials manager, and executive (See Appendix A for the specific survey question, and Table 5.1 for a frequency and percent breakdown). As seen by its exclusion in Table 5.1, there was no respondent who

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categorized him or herself as a secretary with buying responsibility.

The next demographic variable included the type of purchasing the respondent was most actively involved in. This variable was divided into eight categories that included capital equipment, institutional, maintenance-repair-operations (MRO), services, production material, office supplies, multiple types, and other (See Attachment A and Table 5.1). The remaining two demographic variables of gender and C.P.M. certification included three categories each; with gender possessing an unspecified category, female, and male; and C.P.M. certification also possessing yes, no, and an unspecified category.

Experience Level and Purchasing Type

Table 6.1 provides the results of the mean importance scores generated by level of experience. Also included in Table 6.1 and the remaining tables that follow, are mean responses to the $100 allocation question. These allocation results regarding the three process-stages will be included at the bottom of each table, and categorized in the same manner according to the demographic categories just described. From Table 6.1 several observations can be made. First, there tends to be a higher rating given by supervisors in nearly every characteristic except cost. Second, the characteristic innovative tends to increase with level of experience. Third, there is a clear pattern of low mean importance scores for the 'less than one year of experience' cell. However, the frequencies in Table 5.1 show that there is only *one* respondent in this experience level category. The final observation from Table 6.1, is the fairly high weight given to the selection process-stage by executives, and the resulting equal stature given to the searching and sorting process-stages by executives that was observed in earlier group analysis.

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Table 6.2 shows that purchasing professionals who concentrate on the services industry tend to rate most characteristics lower. However, the cell number is again very small and thus, little can be concluded. Of the two cells in Table 6.2 that have a significant number of respondents, production materials and multiple, there is perhaps only one area in which there is a difference in mean scores worth noting. The service characteristic is rated higher for the respondents who purchase in multiple areas than for those respondents in production materials alone. Another interesting result reported in Table 6.2 is the high scores for capital equipment on the characteristics innovative and design, and how the capital equipment respondents rate the searching process-stage *higher* than the sorting and selection process-stages.

Gender and C.P.M. Certification

Table 6.3 provides the comparison results by gender. There is a general pattern identified in Table 6.3 when a difference appears in the rating scores. Males generally tend to rate the characteristics higher in importance when there is a noticeable difference. The one exception is innovative, which was rated lower by males than by females. On the resource allocation question, females rated the selection process-stage higher in importance and the searching process-stage lower in importance.

Table 6.4 provides the comparison results by the demographic category of C.P.M. certification. Although there is no clear pattern for the differences reported in Table 6.4, there appears to be differences in nearly all of the twelve characteristics. Surprisingly, the unspecified group of respondents generally show a lower rating for the majority of the characteristics, with the exception of the competency elements. Again surprisingly, the cost characteristic is rated

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extremely high by the unspecified group of respondents. One final observation about the C.P.M. certification category, is those who were not C.P.M. certified considered the selection process-stage more important than those who were C.P.M. certified.

In conclusion, many differences appear in the additional demographic data analysis provided in this chapter. These differences are not limited to any of the four demographic categorizations of level of experience, type of purchasing concentration, gender, or C.P.M. certification. Once again, low cell frequency counts constrain any attempts at post hoc justification for the observed differences.

CHAPTER 7

SUMMARY AND CONCLUSIONS

The primary context for this research is the new task buying situation faced by organizations who desire a new supplier of technology. This condition of needing to foster a collaborative relationship with a technologically advanced (new) supplier is being faced with increasing regularity and intensity as the "age" of informational technology leaves its infancy. The need for this research context is further reinforced by other biotech advancements that have had an increasingly dramatic impact on the general environment of business-to-business and consumer marketing. While there is much that could be examined in these important arenas, this research has focused on one key factor in the adoption of new technology—new supplier selection. It would be an understatement to suggest that new suppliers will continue to have an impact on the co-development and introduction of new innovative products in the industrial and consumer marketplace. In this research the primary focus has been on a suppliers reputation, and its influence in the possible selection of a long-term supply partner by a manufacturer or processor.

Key results of this supplier selection research tend to reinforce several previous findings by other scholars. First, the quality characteristic was rated most important in each of the searching, sorting, and selection process-stages. This finding supports previous industrial researchers who discovered quality as the most important supplier characteristic (Lehmann and O'Shaughnessy 1982; Wilson 1994). Second, an earlier research prediction that reputational characteristics will increase in importance as progression is made in the process-stages was

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confirmed in this research by both mean importance scores, and the resource allocation results. Third, there is clear grouping of the three elements of reputation which gives support to this dissertations suggestion regarding the multidimensional nature of reputation. Also, supportive of previous research by Moore and Lehman (1982; 1989), there is considerable 'movement around the middle' by many of the reputational characteristics.

Testing for differences in mean importance scores revealed that the attribute element of reputation was significant, but not directionally supported. Testing the behavioral element of reputation resulted in partial support, while testing the competency element of reputation resulted in support, both statistical and directional, for each of the five competency hypotheses examined. This consistent pattern result suggests the existence of a stage effect, and resulted in indexing of the individual reputation characteristics by process-stage. This indexing discovered consistent trend signs in nearly all twelve characteristics, and after the index was adjusted by element, the attribute element behaved in a consistent manner with the research hypotheses.

Factor analysis further reinforced grouping of the reputational element of attribute, but questions the descriptive grouping result discovered between the element behavior and competency. Similar to the descriptive findings, factor analytic results show support for the existence of the three hypothesized elements of reputation, and the three hypothesized process-stages. However, these factor analytic results did not delineate separate 'decision rule' properties during the sorting and selection process-stages.

Combining the supporting rationale, theoretical structure, and survey results lead to several conclusions. First, according to the organizational buying behavior model outlined by Johnston and Lewin (1996), the twelve characteristics of supplier reputation are used differently

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across the searching, sorting, and selection process-stages. These differences are the first empirical attempt at assigning context specific meaning to the new construct of decision rules proposed in the Johnston and Lewin model (1996). This research discovered that decision rules do vary across organizational buying stages, and offer a refinement to existing organizational buyer behavior theory by explaining reputations role in the new task of supplier selection within organizational buying behavior.

Second, the choice decision of a new supplier becomes increasingly important as progression is made in the three process-stages. Of the three elements of reputation, competency is deemed most important and attribute is least important when searching, sorting, and selecting a new, long-term supplier of technology. However, the attribute element was most resilient after examining the elements of reputation through several methods of analysis.

One limitation of this research is the inability to assess an incremental increasing cost factor within the survey instrument to account for advancement in each process-stage. The assumption of incremental increasing cost in gathering additional organizational information was vital to the four guiding propositions, and subsequent structure for the three elements of reputation and twelve supporting variables. However, this limitation is tempered by the notion that if the incremental increasing cost relationship was explicitly described in the survey instrument, the hypothesized relationships could become obvious to respondents, and thus, threaten the validity of the developed new supplier selection 'decision rules.'

Another limitation of this research is the inability to generalize to other organizational buying situations outside the new task environment. Also, the buying center was assumed to be included in the decision process, but multiple responses from each respondents individual firm

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was not generated. However, interviews with executives prior to survey implementation suggest that the sampling frame used in this research includes the purchasing manager who was described by executives as a vital member of the buying center. One interviewed executive described the buying center as ultimately comprising of multiple individuals from different departments that are assembled organizationally for the strategic level decision of new supplier selection.

One suggestion for future research would be to measure reputation in a series of distinct stages (i.e., three cross sectional measurements---or longitudinal---during the searching, sorting, and selection process-stages) to create a more causal research design. This improvement in research design would also allow the assignment of selected partners to performance criteria that results from the new supply partnership, and eventual measurement of the overall effectiveness of the supply partnership.

Another suggestion would be to increase or decrease the level of risk in the supplier selection process-stages to capture the direct influence risk may have individually on the twelve reputation characteristics. This experimental research design of manipulating risk could further strengthen the decision rules resulting from this research. Also, conducting reputation research outside the new task environment---which could be one logical method of manipulating risk--- would allow generalizations about the influence of reputation in other organizational buying situations. Finally, the inclusion of a national sample of the NAPM membership would offer a better understanding of possible differences in the importance of reputation characteristics according to gender, C.P.M. certification, level of experience, and type of purchasing.

In conclusion, this paper integrates several diverse literatures from economics,

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organizational theory, marketing, and sociology to develop a theoretical framework of organizational buying behavior and supplier selection. This supplier selection framework is grounded in the new task dimension of present organizational buyer behavior literature, and considers theory from economics of information, signaling, reputation, risk, and decision analysis relevant to the developed supplier selection framework. This framework is developed to identify and define the supplier reputation construct, and to model simplified decision rules that organizational managers, purchasing professionals, and executives employ while searching, sorting, and selecting new, long-term suppliers. Managerial and theoretical implications generated from this dissertation provide insights in the area of business-to-business reputation development, communication of supplier reputation, and overall marketing strategy for potential supply partners. Another unique insight generated from the supplier selection 'decision rules' developed in this dissertation, is the strengthening of purchasing managers understanding about reputations influence on a manufacturing organization that is seeking a new, long-term supply relationship.

In closing, the issue of selecting a new supplier of technology appears to be a challenging and complex issue of strategic importance for upper management at several firms. Scholars have also identified the critical need for an increase in the amount of research attention given to firm reputation, and how it influences exchange in the business-to-business and consumer marketplace. This recent increasing attention by practitioners and academics facilitated a new conference in 1997 titled *Corporate Reputation, Image, and Competitiveness* sponsored by Professor Charles Fombrun and the Leonard N. Stern School of Business at New York University. Based upon the level of interest, participation, and feedback from the authors

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presentation at the *Corporate Reputation, Image, and Competitiveness* conference, there is practical and theoretical relevance accelerating both media attention, and creative research on reputation issues. The author welcomes others who choose to embark on further reputation research, and encourages others to examine the exciting area of supplier reputation and the selection decision process.

FIGURE 2.1

Organizational Buying Model
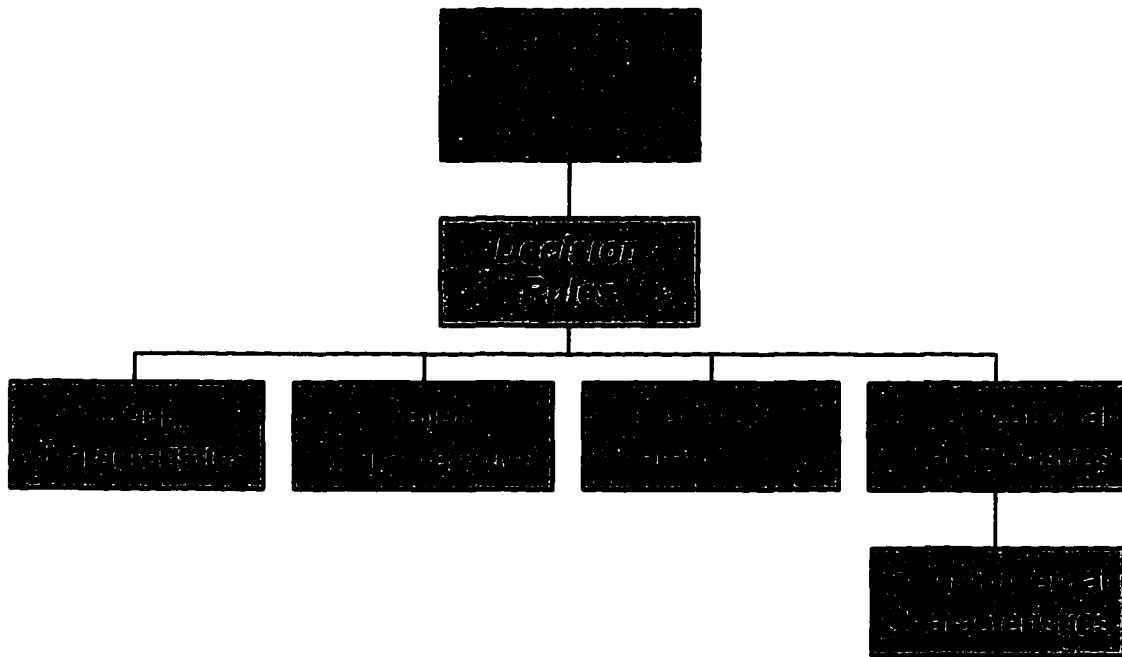
* Adapted from Johnston and Lewin 1996

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FIGURE 2.2

Supplier Reputation Elements

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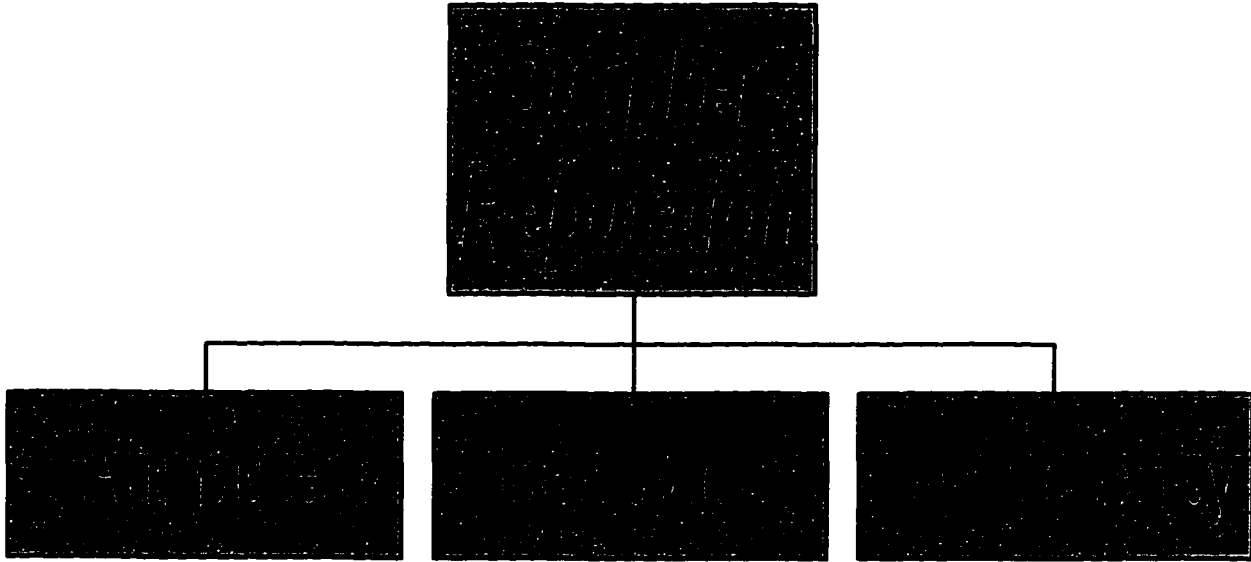
FIGURE 2.3

Supplier Reputation Elements

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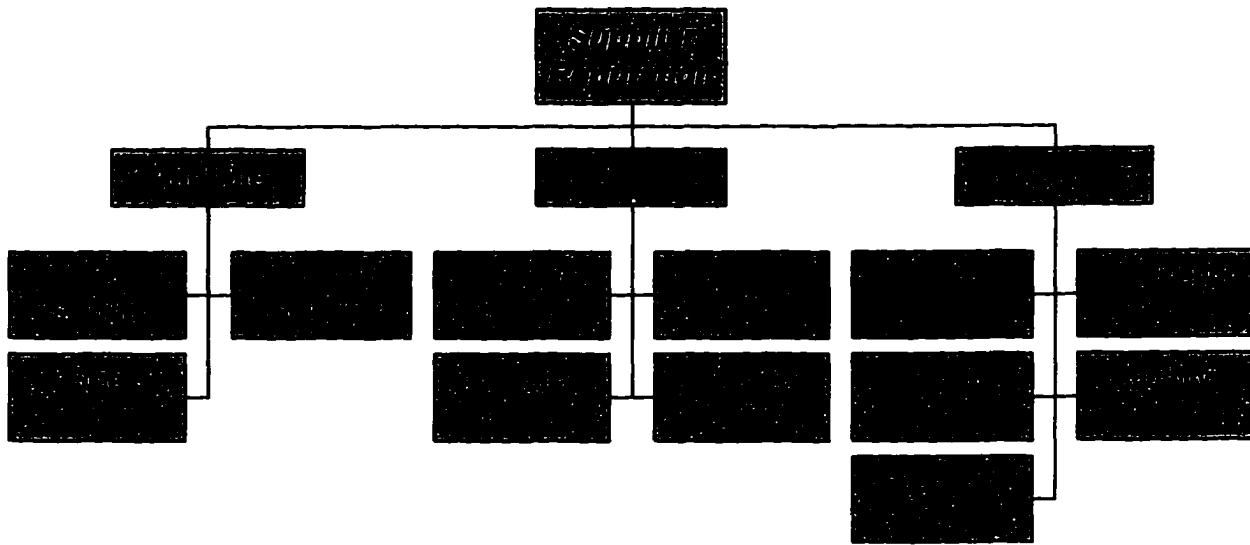
TABLE 2.1

BUYGRID Decision Framework

BUYING SITUATIONS	Newness of Problem	Information Requirement	Consideration of Alternative Sources
New Task	High	Maximum	Important
Modified Rebuy	Medium	Moderate	Limited
Straight Rebuy	Low	Minimal	None

TABLE 2.2

Organizational Buying Stages

1. Anticipation or recognition of a problem (need) and a general solution.

2. Determination of characteristics and quantity of needed item.

3. Description of characteristics (specifications) and quantity of needed item.

4. Search for and qualification of potential sources.

5. Request proposals.

6. Analysis and evaluation of proposals.

7. Selection of supplier and ordering routine.

8. Post-purchase evaluation and performance feedback.

TABLE 3.1

Theoretical Framework for Decision Rules

	Searching	Sorting	Selection
Attribute	Highest		
Behavior		Highest	
Competency			Highest

TABLE 3.2

Framework for Decision Rules with Supporting Variables

	Searching	Sorting	Selection
Attribute	Financial Stability Managerial Stability Size		
Behavior		Commitment Cooperative Innovative Trustworthy	
Competency			Cost Delivery Design Quality Service

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TABLE 4.1

Hypothesized Relationships Between Elements, Supporting Variables, and Process-Stages

	Searching	Sorting	Selection
Attribute	H1a: A1 Search > A1 Sort H1b: A1 Search > A1 Select H2a: A2 Search > A2 Sort H2b: A2 Search > A2 Select H3a: A3 Search > A3 Sort H3b: A3 Search > A3 Select		
Behavior		H4a: B1 Sort > B1 Search H4b: B1 Sort > B1 Select H5a: B2 Sort > B2 Search H5b: B2 Sort > B2 Select H6a: B3 Sort > B3 Search H6b: B3 Sort > B3 Select H7a: B4 Sort > B4 Search H7b: B4 Sort > B4 Select	
Competency			H8a: C1 Select > C1 Search H8b: C1 Select > C1 Sort H9a: C2 Select > C2 Search H9b: C2 Select > C2 Sort H10a: C3 Select > C3 Search H10b: C3 Select > C3 Sort H11a: C4 Select > C4 Search H11b: C4 Select > C4 Sort H12a: C5 Select > C5 Search H12b: C5 Select > C5 Sort

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TABLE 5.1

Categorical Frequencies

	Frequency	Percent
GENDER		
Unspecified	8	9.4
Female	19	22.4
Male	58	68.2
Total	85	100.0
CPM		
Unspecified	8	9.4
No	48	56.5
Yes	29	34.1
Total	85	100.0
PURCHASING TYPE		
Capital eq.	4	4.7
Institutional	4	4.7
MRO	3	3.5
Services	2	2.4
Production mat.	28	32.9
Office supl.	2	2.4
Other	9	10.6
Multiple Types	30	35.3
Missing	3	3.5
Total	85	100.0
EXPERIENCE		
Less than 1 year	1	1.2
Assistant Buyer	8	9.4
Senior Buyer	23	27.1
Supervisor	9	10.6
P/M Manager	33	38.8
Executive	10	11.8
Missing	1	1.2
Total	85	100.0

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TABLE 5.2

Average Firm Size

CURRENT	N	Minimum	Maximum	Mean	Std. Deviation
Current Annual Sales (dollars)	66	6 million	75 billion	5.3 billion	12.8 billion
Current # of Employees	73	40	120,200	17,228	28,189
DESIRED	N	Minimum	Maximum	Mean	Std. Deviation
Desired Sales for Your New Supply Partner (dollars)	40	1 million	1 billion	95.4 million	242.9 million
Desired # of Employees for Your New Supply Partner	36	20	10,000	485	1,648

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TABLE 5.3

Characteristic Mean Importance Score, Standard Deviation, and Rank

(1 = Somewhat Important, 7 = Extremely Important)

	Searching mean	rank	Sorting mean	rank	Selection mean	rank
Financial Stability	4.79 (1.7)	5	5.41 (1.2)	7	5.88 (1.1)	8
Managerial Stability	3.90 (1.6)	11	4.72 (1.5)	11	5.21 (1.4)	11
Size	2.36 (1.5)	12	2.76 (1.6)	12	3.21 (1.7)	12
Commitment	4.04 (1.9)	10	5.17 (1.4)	9	6.31 (1.1)	3
Cooperative	4.60 (1.7)	8	5.33 (1.3)	8	6.09 (1.1)	6
Innovative	5.02 (1.8)	4	5.46 (1.5)	6	5.87 (1.5)	9
Trustworthy	4.65 (1.9)	7	5.51 (1.3)	5	6.27 (1.1)	4
Cost	4.07 (1.9)	9	4.93 (1.5)	10	5.80 (1.3)	10
Delivery	4.76 (1.6)	6	5.53 (1.2)	4	6.32 (1.0)	2
Design	5.24 (1.6)	2	5.60 (1.5)	3	5.99 (1.3)	7
Quality	5.69 (1.6)	1	6.21 (1.1)	1	6.71 (.9)	1
Service	5.07 (1.6)	3	5.69 (1.3)	2	6.13 (1.2)	5

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TABLE 5.4

Combined Process-Stage Mean Importance Score
(average of all twelve characteristics by process-stage)

(1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation
Searching	83	4.51	1.10
Sorting	84	5.20	.85
Selection	84	5.82	.78

TABLE 5.5

Resource Allocation Question Results ($100 Mean Score)

	N	Minimum	Maximum	Mean	Std. Deviation
Searching	82	5	70	25.35	13.88
Sorting	82	10	80	29.04	11.51
Selection	82	10	80	45.55	15.83

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TABLE 5.6

Combined Row Mean Importance Score, Standard Deviation, and Rank

(1 = Somewhat Important, 7 = Extremely Important)

	Combined Stages		
	mean	std. dev.	rank
Financial Stability	5.35	1.1	8
Managerial Stability	4.59	1.3	11
Size	2.79	1.5	12
Commitment	5.18	1.2	9
Cooperative	5.36	1.0	7
Innovative	5.44	1.4	6
Trustworthy	5.48	1.2	5
Cost	4.94	1.3	10
Delivery	5.55	1.0	4
Design	5.60	1.3	3
Quality	6.20	1.0	1
Service	5.65	1.1	2

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TABLE 5.7

Correlations for the SEARCHING Process-Stage

	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	C5
A1	1.0											
A2	.485**	1.0										
A3	.285**	.561**	1.0									
B1	.394**	.329**	.241*	1.0								
B2	.357**	.372**	.074	.687**	1.0							
B3	.451**	.255*	.193	.298**	.298**	1.0						
B4	.512**	.403**	.311**	.624**	.600**	.294**	1.0					
C1	.255*	.257*	.306**	.476**	.322**	.106	.387**	1.0				
C2	.339**	.207	.223*	.482**	.245*	.270*	.461**	.548**	1.0			
C3	.260*	.105	-.053	.278*	.263*	.707**	.128	.109	.211	1.0		
C4	.417**	.136	.000	.387**	.356**	.437**	.464**	.316*	.512**	.324**	1.0	
C5	.435**	.293**	.160	.500**	.526**	.374**	.622**	.220*	.476**	.141	.704**	1.0

* Correlation is significant at the .05 level (2-tailed).
** Correlation is significant at the .01 level (2-tailed).

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TABLE 5.8

Correlations for the SORTING Process-Stage

	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	C5
A1	1.0											
A2	.448**	1.0										
A3	.262*	.469**	1.0									
B1	.267*	.257*	.088	1.0								
B2	.323**	.270*	.080	.671**	1.0							
B3	.336**	.199	.193	.470**	.521**	1.0						
B4	.467**	.418**	.274*	.430**	.378**	.371**	1.0					
C1	.132	.127	.169	.373**	.234*	.234*	.209	1.0				
C2	.262*	.147	.123	.515**	.428**	.454**	.338**	.504**	1.0			
C3	.136	.046	.049	.413**	.418**	.785**	.295**	.268*	.376**	1.0		
C4	.211	.148	.040	.483**	.548**	.589**	.348**	.325*	.594**	.475**	1.0	
C5	.377**	.160	.214*	.294**	.405**	.353**	.470**	.081	.457**	.233*	.398**	1.0

* Correlation is significant at the .05 level (2-tailed).
** Correlation is significant at the .01 level (2-tailed).

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TABLE 5.9

Correlations for the SELECTION Process-Stage

	A1	A2	A3	B1	B2	B3	B4	C1	C2	C3	C4	C5
A1	1.0											
A2	.387**	1.0										
A3	.141	.396**	1.0									
B1	.232*	.307**	-.049	1.0								
B2	.460**	.416**	.037	.674**	1.0							
B3	.343**	.330**	.116	.698**	.527**	1.0						
B4	.454**	.404**	.047	.687**	.575**	.598**	1.0					
C1	.122	.129	.043	.225*	.037	.291**	.117	1.0				
C2	.332**	.220*	-.084	.630**	.588**	.405**	.453**	.343**	1.0			
C3	.299**	.267*	.059	.588**	.424**	.796**	.590**	.281**	.421**	1.0		
C4	.155	.125	-.185	.715**	.483**	.513**	.547**	.457**	.678**	.561**	1.0	
C5	.376**	.152	.020	.566**	.473**	.425**	.717**	.113	.544**	.514**	.570**	1.0

* Correlation is significant at the .05 level (2-tailed).
** Correlation is significant at the .01 level (2-tailed).

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TABLE 5.10

SEARCHING Stage Factor Analysis

Bartlett's Test of Sphericity (Approx. Chi-square) = 482.73
Significance = .0000   df = 66

	Factor 1	Factor 2	Factor 3	Factor 4	Communality
Financial Stability	.438	.379	.467	.100	.565
Managerial Stability	.304	.092	.821	.002	.775
Size	-.019	-.023	.852	.249	.790
Commitment	.690	.114	.189	.362	.656
Cooperative	.845	.096	.118	.019	.738
Innovative	.215	.882	.192	.049	.865
Trustworthy	.766	.055	.287	.267	.743
Cost	.183	-.031	.223	.817	.753
Design	.281	.199	.061	.815	.787
Delivery	.069	.884	-.025	.061	.791
Quality	.548	.481	-.156	.378	.700
Service	.778	.224	.039	.204	.699
Eigenvalue	4.97	1.61	1.27	1.00	
% Variance Explained	41.5	13.4	10.6	8.4	
Cumulative %	41.5	54.9	65.5	73.9	

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TABLE 5.11

SORTING Stage Factor Analysis

Bartlett's Test of Sphericity (Approx. Chi-square) = 410.11
Significance = .0000   df = 66

	Factor 1	Factor 2	Factor 3	Communality
Financial Stability	.293	.681	-.090	.558
Managerial Stability	.043	.796	.159	.662
Size	-.084	.721	.202	.568
Commitment	.677	.200	.303	.591
Cooperative	.733	.221	.040	.588
Innovative	.806	.145	.036	.672
Trustworthy	.444	.614	-.068	.580
Cost	.269	.137	.857	.827
Design	.654	.172	.385	.606
Delivery	.760	-.081	.115	.597
Quality	.787	.094	.070	.634
Service	.539	.419	-.330	.576
Eigenvalue	4.76	1.66	1.04	
% Variance Explained	39.7	13.9	8.7	
Cumulative %	39.7	53.5	62.2	

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TABLE 5.12

SELECTION Stage Factor Analysis

Bartlett's Test of Sphericity (Approx. Chi-square) = 572.82
Significance = .0000   df = 66

	Factor 1	Factor 2	Factor 3	Communality
Financial Stability	.506	-.094	.445	.508
Managerial Stability	.312	.062	.754	.447
Size	-.131	.039	.823	.048
Commitment	.813	.310	.001	.855
Cooperative	.772	.017	.201	.747
Innovative	.677	.335	.262	.789
Trustworthy	.860	.017	.175	.822
Cost	.028	.915	.112	.385
Design	.611	.519	-.078	.733
Delivery	.668	.348	.162	.767
Quality	.673	.576	-.219	.786
Service	.798	.054	-.034	.704
Eigenvalue	5.49	1.60	1.11	
% Variance Explained	45.8	13.4	9.3	
Cumulative %	45.8	59.2	68.4	

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TABLE 5.13

Factor Loading Pattern Summary

	Searching	Sorting	Selection
Financial Stability	3	2	3 or 1
Managerial Stability	3	2	3
Size	3	2	3
Commitment	1	1	1
Cooperative	1	1	1
Innovative	2	1	1
Trustworthy	1	2	1
Cost	4	3	2
Delivery	4	1	1
Design	2	1	1
Quality	1	1	1
Service	1	1	1

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TABLE 5.14

Paired Samples Statistics, Correlations, and T-Test for H1a, and H1b

(H1a: Financial Stability SEARCH > Financial Stability SORT)
(H1b: Financial Stability SEARCH > Financial Stability SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H1a:						
FIN Search	84	4.79	1.78	.19	.678	.000
FIN Sort	84	5.39	1.28	.14		
Pair 2 H1b:						
FIN Search	84	4.79	1.78	.19	.454	.000
FIN Select	84	5.88	1.10	.12		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H1a: FIN Search FIN Sort	-.61	1.31	.14	-4.25	83	.000
Pair 2 H1b: FIN Search FIN Select	-1.10	1.61	.18	-6.23	83	.000

* 99% Confidence Interval

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TABLE 5.15

Paired Samples Statistics, Correlations, and T-Test for H2a, and H2b

(H2a: Managerial Stability SEARCH > Managerial Stability SORT)
(H2b: Managerial Stability SEARCH > Managerial Stability SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H2a:						
MAN Search	83	3.90	1.62	.18	.669	.000
MAN Sort	83	4.69	1.51	.17		
Pair 2 H2b:						
MAN Search	83	3.90	1.62	.18	.553	.000
MAN Select	83	5.20	1.48	.16		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H2a:						
MAN Search MAN Sort	-.78	1.28	.14	-5.57	82	.000
Pair 2 H2b:						
MAN Search MAN Select	-1.30	1.47	.16	-8.05	82	.000

* 99% Confidence Interval

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TABLE 5.16

Paired Samples Statistics, Correlations, and T-Test for H3a, and H3b

(H3a: Size SEARCH > Size SORT)
(H3b: Size SEARCH > Size SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H3a: SIZ Search SIZ Sort	83 83	2.36 2.80	1.54 1.64	.17 .18	.679	.000
Pair 2 H3b: SIZ Search SIZ Select	83 83	2.36 3.24	1.54 1.79	.17 .20	.683	.000
	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H3a: SIZ Search SIZ Sort	-.43	1.28	.14	-3.07	82	.000
Pair 2 H3b: SIZ Search SIZ Select	-.88	1.35	.15	-5.94	82	.000

* 99% Confidence Interval

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TABLE 5.17

Paired Samples Statistics, Correlations, and T-Test for H4a, and H4b

(H4a: Commitment SORT > Commitment SEARCH)
(H4b: Commitment SORT > Commitment SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H4a:						
COM Sort	83	5.16	1.44	.16	.571	.000
COM Search	83	4.05	1.96	.21		
Pair 2 H4b:						
COM Sort	84	5.17	1.43	.16	.599	.000
COM Select	84	6.33	1.14	.12		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H4a:						
COM Sort	1.11	1.64	.18	6.16	82	.000
COM Search						
Pair 2 H4b:						
COM Sort	-1.17	1.18	.13	-9.05	83	.000
COM Select						

* 99% Confidence Interval

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TABLE 5.18

Paired Samples Statistics, Correlations, and T-Test for H5a, and H5b

(H5a: Cooperative SORT > Cooperative SEARCH)
(H5b: Cooperative SORT > Cooperative SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H5a:						
COO Sort	83	5.34	1.32	.14	.536	.000
COO Search	83	4.59	1.73	.19		
Pair 2 H5a:						
COO Sort	84	5.33	1.31	.14	.713	.000
COO Select	84	6.15	.99	.11		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H5a:						
COO Sort	.75	1.51	.17	4.49	82	.000
COO Search						
Pair 2 H5a:						
COO Sort	-.82	.92	.10	-8.17	83	.000
COO Select						

* 99% Confidence Interval

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TABLE 5.19

Paired Samples Statistics, Correlations, and T-Test for H6a, and H6b

(H6a: Innovative SORT > Innovative SEARCH)
(H6b: Innovative SORT > Innovative SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H6a:						
INN Sort	83	5.47	1.60	.18	.666	.000
INN Search	83	5.00	1.80	.20		
Pair 2 H6b:						
INN Sort	84	5.46	1.59	.17	.840	.000
INN Select	84	5.87	1.52	.17		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H6a: INN Sort INN Search	.47	1.40	.15	3.05	82	.000
Pair 2 H6b: INN Sort INN Select	-.40	.88	.09	-4.21	83	.000

* 99% Confidence Interval

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TABLE 5.20

Paired Samples Statistics, Correlations, and T-Test for H7a, and H7b

(H7a: Trustworthy SORT > Trustworthy SEARCH)
(H7b: Trustworthy SORT > Trustworthy SELECT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H7a:						
TRU Sort	83	5.51	1.34	.15	.676	.000
TRU Search	83	4.66	1.98	.22		
Pair 2 H7b:						
TRU Sort	84	5.51	1.33	.15	.566	.000
TRU Select	84	6.27	1.15	.13		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H7a: TRU Sort TRU Search	.84	1.46	.16	5.26	82	.000
Pair 2 H7b: TRU Sort TRU Select	-.76	1.17	.13	-5.97	83	.000

* 99% Confidence Interval

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TABLE 5.21

Paired Samples Statistics, Correlations, and T-Test for H8a, and H8b

(H8a: Cost SELECT > Cost SEARCH)
(H8b: Cost SELECT > Cost SORT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H8a:						
COS Select	84	5.79	1.33	.14	.449	.000
COS Search	84	4.07	1.93	.21		
Pair 2 H8b:						
COS Select	85	5.80	1.33	.14	.627	.000
COS Sort	85	4.93	1.57	.17		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H8a: COS Select COS Search	1.71	1.78	.19	8.82	83	.000
Pair 2 H8b: COS Select COS Sort	.87	1.27	.14	6.31	84	.000

* 99% Confidence Interval

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TABLE 5.22

Paired Samples Statistics, Correlations, and T-Test for H9a, and H9b

(H9a: Delivery SELECT > Delivery SEARCH)
(H9b: Delivery SELECT > Delivery SORT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H9a:						
DEL Select	83	6.36	.98	.11	.272	.013
DEL Search	83	4.76	1.60	.18		
Pair 2 H9b:						
DEL Select	85	6.32	1.08	.12	.520	.000
DEL Sort	85	5.53	1.22	.13		
	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H9a:						
DEL Select DEL Search	1.60	1.64	.18	8.91	82	.000
Pair 2 H9b:						
DEL Select DEL Sort	.79	1.13	.12	6.40	84	.000

* 99% Confidence Interval

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TABLE 5.23

Paired Samples Statistics, Correlations, and T-Test for H10a, and H10b

(H10a: Design SELECT > Design SEARCH)
(H10b: Design SELECT > Design SORT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H10a:						
DES Select	84	5.99	1.38	.15	.407	.000
DES Search	84	5.23	1.70	.19		
Pair 2 H10b:						
DES Select	84	5.99	1.38	.15	.831	.000
DES Sort	84	5.60	1.55	.17		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H10a: DES Select DES Search	.76	1.70	.19	4.11	83	.000
Pair 2 H10b: DES Select DES Sort	.39	.86	.09	4.16	83	.000

* 99% Confidence Interval

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TABLE 5.24

Paired Samples Statistics, Correlations, and T-Test for H11a, and H11b

(H11a: Quality SELECT > Quality SEARCH)
(H11b: Quality SELECT > Quality SORT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H11a:						
QUA Select	85	6.71	.92	.10	.347	.001
QUA Search	85	5.69	1.61	.17		
Pair 2 H11b:						
QUA Select	85	6.71	.92	.10	.668	.000
QUA Sort	85	6.21	1.12	.12		
	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H11a:						
QUA Select QUA Search	1.01	1.55	.17	6.00	84	.000
Pair 2 H11b:						
QUA Select QUA Sort	.49	.85	.09	5.33	84	.000

*** 99% Confidence Interval**

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TABLE 5.25

Paired Samples Statistics, Correlations, and T-Test for H12a, and H12b

(H12a: Service SELECT > Service SEARCH)
(H12b: Service SELECT > Service SORT)

Scale Anchors (1 = Somewhat Important, 7 = Extremely Important)

	N	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Pair 1 H12a:						
SER Select	84	6.17	1.16	.13	.456	.000
SER Search	84	5.07	1.64	.18		
Pair 2 H12b:						
SER Select	85	6.13	1.20	.13	.791	.000
SER Sort	85	5.69	1.32	.14		

	Mean	Std. Deviation	Std. Error Mean	t*	df	Sig.
Pair 1 H12a: SER Select SER Search	1.10	1.52	.17	6.61	83	.000
Pair 2 H12b: SER Select SER Sort	.44	.82	.08	4.87	84	.000

* 99% Confidence Interval

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TABLE 5.26

Summary of Paired T-test (t value) for Hypothesized Relationships*

	Searching	Sorting	Selection
Financial Stability	referent	-4.2	-6.2
Managerial Stability	referent	-5.5	-8.0
Size	referent	-3.0	-5.9
Commitment	6.1	referent	-9.0
Cooperative	4.4	referent	-8.1
Innovative	3.0	referent	-4.2
Trustworthy	5.2	referent	-5.9
Cost	8.8	6.3	referent
Delivery	8.9	6.4	referent
Design	4.1	4.1	referent
Quality	6.0	5.3	referent
Service	6.6	4.8	referent

* 99% Confidence Interval

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TABLE 5.27

Differences In Relative Scores Across Process-Stages

	Searching	Sorting	Selection	Trend Sign
Financial Stability	.28	.21	.06	negative
Managerial Stability	.61	.48	.61	-
Size	2.15	2.44	2.61	negative
Commitment	.47	.03	.49	positive
Cooperative	.09	.13	.27	positive
Innovative	.51	.26	.05	negative
Trustworthy	.14	.31	.45	positive
Cost	.44	.27	.02	positive
Delivery	.25	.33	.50	positive
Design	.73	.40	.17	negative
Quality	1.18	1.01	.89	negative
Service	.56	.49	.31	negative

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TABLE 5.28

Differences In Relative Scores Adjusted by Elements Across Process-Stages

	Searching	Sorting	Selection	Trend Sign
Financial Stability	1.11	1.12	1.12	-
Managerial Stability	.22	.43	.45	positive
Size	-1.32	-1.53	-1.55	negative
Commitment	-.53	-.19	.16	positive
Cooperative	.03	-.03	-.06	-
Innovative	.45	.10	-.28	negative
Trustworthy	.08	.15	.12	-
Cost	-.90	-.68	-.40	positive
Delivery	-.21	-.08	.12	positive
Design	.27	-.01	-.21	negative
Quality	.72	.60	.51	negative
Service	.10	.08	-.07	negative

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TABLE 5.29

Elemental Differences In Process-Stage Scores

	Searching	Sorting	Selection	Trend Sign
ATTRIBUTE	-1.10	-1.20	-1.42	negative
BEHAVIOR	.25	.41	.67	positive
COMPETENCY	.85	.79	.75	negative

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TABLE 6.1

Mean Importance Scores by Level of Experience

(1 = Somewhat Important, 7 = Extremely Important)

	Less than One Year	Assistant Buyer	Senior Buyer	Super-visor	P/M Manager	Executive
Financial St.	2.66	5.0	5.53	6.00	5.33	5.16
Managerial St.	3.00	4.20	4.60	4.88	4.71	4.33
Size	2.66	2.58	2.49	2.88	3.01	2.83
Commitment	4.66	5.33	4.92	5.37	5.37	5.20
Cooperative	4.33	5.75	5.27	5.29	5.42	5.43
Innovative	3.33	4.91	5.62	5.70	5.44	5.90
Trustworthy	3.33	5.37	5.43	5.70	5.60	5.50
Cost	3.66	5.83	4.24	5.00	5.39	4.66
Delivery	3.00	5.87	5.30	5.85	5.80	5.56
Design	4.66	5.75	5.57	5.62	5.76	5.56
Quality	4.00	6.45	5.97	6.48	6.35	6.50
Service	4.66	5.58	5.40	6.00	5.81	6.03
SEARCH	10.00	30.00	26.70	23.33	26.21	20.00
SORT	40.00	27.14	26.35	36.67	30.30	23.13
SELECT	50.00	42.86	46.96	40.00	43.48	56.25

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TABLE 6.2

Mean Importance Scores by Type of Purchasing

(1 = Somewhat Important, 7 = Extremely Important)

	Capital EQ	Institu- tional	MRO	Serv.	Prod. Mat.	Office Supl.	Other	Multiple
Financial Stability	5.08	5.50	5.11	4.66	5.25	5.50	5.66	5.47
Managerial Stability	4.08	5.66	4.77	3.16	4.66	5.33	4.22	4.67
Size	2.33	2.75	3.56	1.66	2.82	3.16	2.88	2.85
Commitment	5.08	5.16	4.77	4.33	5.05	5.00	5.14	5.49
Cooperative	6.00	6.25	5.11	5.16	5.23	5.33	5.11	5.42
Innovative	6.75	6.08	5.00	3.66	5.26	5.50	6.11	5.52
Trustworthy	5.50	5.75	5.44	4.66	5.50	5.83	5.11	5.65
Cost	4.50	5.41	5.11	3.00	5.29	3.83	4.90	5.06
Delivery	5.08	6.16	4.22	3.83	5.74	5.33	5.77	5.70
Design	7.00	6.25	5.11	6.16	5.37	6.00	6.37	5.49
Quality	6.50	6.83	5.22	5.16	6.18	6.00	6.74	6.22
Service	5.66	7.00	4.55	4.83	5.28	5.66	6.00	5.95
SEARCH	38.75	33.75	16.67	27.50	27.30	22.50	31.11	22.13
SORT	27.50	31.25	30.00	17.50	26.67	30.00	30.00	31.37
SELECT	33.75	35.00	53.33	55.00	47.96	47.50	38.89	46.33

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TABLE 6.3

Mean Importance Scores by Gender

(1 = Somewhat Important, 7 = Extremely Important)

	Unspecified	Female	Male
Financial Stability	5.25	5.36	5.38
Managerial Stability	4.29	4.45	4.66
Size	2.41	2.89	2.83
Commitment	5.04	5.08	5.23
Cooperative	5.33	5.07	5.45
Innovative	4.83	5.70	5.45
Trustworthy	5.33	5.49	5.50
Cost	6.15	4.33	4.98
Delivery	5.87	5.38	5.60
Design	5.29	5.73	5.61
Quality	6.16	6.05	6.27
Service	5.41	5.59	5.75
SEARCH	25.50	22.37	26.36
SORT	23.88	30.00	29.45
SELECT	50.63	47.63	44.09

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TABLE 6.4

Mean Importance Scores by C.P.M. Certification

(1 = Somewhat Important, 7 = Extremely Important)

	Unspecified	Yes	No
Financial Stability	5.25	5.31	5.47
Managerial Stability	4.29	4.78	4.33
Size	2.41	2.81	2.89
Commitment	5.04	5.37	4.91
Cooperative	5.33	5.45	5.19
Innovative	4.83	5.34	5.78
Trustworthy	5.33	5.65	5.25
Cost	6.12	4.85	4.75
Delivery	5.87	5.77	5.19
Design	5.29	5.55	5.78
Quality	6.16	6.32	6.04
Service	5.41	5.81	5.54
SEARCH	25.50	27.28	22.14
SORT	23.88	31.52	26.43
SELECT	50.63	41.20	51.25

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APPENDIX A

Please put yourself in the situation described below:

You need a new supply partner to co-develop a new, innovative product for which the details are not known. You anticipate this new supplier being the primary provider of technology that is critical to the development of this new product. You anticipate the new product being a significant component of your future market position. It has been determined that you will be unable to use any of the suppliers with which you are currently doing business, and anticipate the new supply partner relationship being long-term in nature.

Suppliers will be evaluated according to the following general characteristics:

Commitment	*Design Competency*	*Quality*
Cooperativeness	*Financial Stability*	*Service*
Cost	*Innovativeness*	*Size*
Delivery Competency	*Managerial Stability*	*Trustworthiness*

Now, assume the selection process consists of three stages; (1) *searching* for possible supply candidates by building a large preliminary list, (2) *sorting* this preliminary list down to a smaller, more manageable list, and (3) *selection* of a primary supply partner. During the *searching* stage, building a potentially large preliminary list is important because you are searching for a new supplier in an area in which you do not have expert knowledge. *Sorting* this preliminary list down to a smaller, more manageable list is important because of the need to conduct a rigorous analysis only on a few candidates during the *selection* stage. As progress is made through the three stages, higher levels of investment in time and resources are required.

Please rate the importance of the twelve general characteristics in each of the three selection process stages. A rating of 7 means that the selected characteristic is extremely important, while a ranking of 1 means that the selected characteristic is somewhat important.

(Somewhat Important=1, 2, 3, 4, 5, 6, 7=Extremely Important).

	SEARCHING	*SORTING*	*SELECTION*
Commitment			
Cooperativeness			
Cost			
Delivery Competency			
Design Competency			
Financial Stability			

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	SEARCHING	SORTING	SELECTION
Innovativeness			
Managerial Stability			
Quality			
Service			
Size			
Trustworthiness			

Suppose that you needed to allocate $100 of resources (includes both time and money) to the entire selection process. How would you distribute the $100 of resources to the three stages (the total from all three stages must equal $100).

_____ *Searching*

_____ *Sorting*

_____ *Selecting*

_____

100 Total

How large a firm are you?
_____ Sales Volume
_____ # of Employees

How large would you desire your new supply partner to be?
_____ Sales Volume
_____ # of Employees

Indicate the type of purchasing you are most actively involved in:
_____ Capital Equipment
_____ Institutional
_____ MRO
_____ Services
_____ Production Material
_____ Office Supplies
_____ Multiple
_____ Other

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Indicate your current level of experience:

_____ Less than one year of experience
_____ Secretary with buying responsibility
_____ Assistant Buyer
_____ Senior Buyer
_____ Supervisor
_____ Purchasing or Materials Manager
_____ Executive

Indicate your gender:

_____ Female
_____ Male

Indicate whether you have achieved C.P.M. certification:

_____ Yes
_____ No

Thank you for your valuable time. Any comments or suggestions you can provide to help us better understand the selection problem posed in this survey would be greatly appreciated. (Please use the backside of this survey).

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APPENDIX B

Industrial Distribution Management Program
304 David Kinley Hall
1407 West Gregory Drive
Urbana, IL 61801
(217) 333-XXXX

[DATE]

[FIELD](name)
[FIELD](company)
[FIELD](address)
[FIELD](city/state/zip)

Dear [FIELD](title):

      I would like to ask if you would be willing to complete a questionnaire for one of my graduate students, Brent Hathaway. He is researching the subject of new supplier selection and your input would be of great value to his study. Responding to the questionnaire should require only a few minutes of your time.

      Your response will be anonymous and confidential. Brent is tracking responses only by a number on the return envelope to allow a summary of the results to be sent to you.

      Brent and I very much appreciate your willingness to participate in this study.

      Sincerely,

      Richard M. Hill
      CSIDA Professor
      Director

RMH/bh

Enclosure: Survey Questionnaire

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CURRICULUM VITAE

BRENT ARTHUR HATHAWAY

EDUCATION:

1997 (May)	University of Illinois, Champaign-Urbana, Illinois Ph.D., Business Administration Major: Marketing Minors: Business-to-Business Marketing
1993	Purdue University, West Lafayette, Indiana M.S., Agricultural Economics Specialization: Agribusiness Management
1987	Utah State University, Logan, Utah B.S., Agricultural Economics Specialization: Business Administration

RESEARCH INTERESTS:

Business-to-Business Relations
Supplier Selection Decision Criteria
Reputation Formation in Networks
International Marketing of High-Tech or Bio-Tech Products
Sales Force Effectiveness and Sales Management

PEER REVIEWED JOURNAL ARTICLES—ABSTRACTS—PRESENTATIONS:

Hathaway, B.A. (1997), "The Influence of Reputation On the Selection of a New Strategic Supply Partner," Invited presentation at the *Conference on Corporate Reputation, Image, and Competitiveness*, Stern School of Business, New York University.

Hagen, J.M., and B.A. Hathaway (1997), "The Critical Role of Reputation in Interfirm Cooperation," Invited presentation at the *Conference on Corporate Reputation, Image, and Competitiveness*, Stern School of Business, New York University.

Hagen, J.M., and B.A. Hathaway (1995), "Reputation in Interfirm Relations: A Research Agenda," Invited presentation at the June meeting of NE-165 (*Vertical Coordination in the Food System*), Washington, D.C.

Hathaway, B.A. (1994), "Attributes of the Elite," Invited presentation at the national conference *From Salesperson to Field Marketer* at Purdue University.

Hathaway, B.A., Akridge, J.T., and W.D. Downey (1993), "The Effectiveness of Video-Based Instruction in an Undergraduate Agricultural Business Course," *NACTA Journal*, 37(4): 33-37 (1994 Honorable Mention for E. B. Knight Journal Award).

Hathaway, B.A., and J.T. Akridge (1993), "The Effectiveness of Video-Based Instruction in an Undergraduate Agricultural Sales Course," Abstract in *American Journal of Agricultural Economics* 75 (12): 1296.

Hathaway, B.A., and J.T. Akridge (1993), "The Effectiveness of Video-Based Instruction in an Undergraduate Agricultural Sales Course," Selected paper at the annual August AAEA- CAEA annual meeting.

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WORKING PAPERS:

Hathaway, B.A. (1996), "An Integrative Review of Reputation and Channel Member
Selection," Working Paper, University of Illinois, Urbana-Champaign.
Hathaway, B.A. (1995), "The Influence of Compensation Type on Sales Team Motivation,"
Working Paper, University of Illinois, Urbana-Champaign.
Hathaway, B.A. (1995), "Relationship Marketing: Fad, Fact, or Future,"
Working Paper, University of Illinois, Urbana-Champaign.

TEACHING INTERESTS:

Marketing Principles—Marketing Management—Marketing Strategy
Distribution Channels
International Marketing
Industrial (Business-to-Business) Marketing
Technical Sales and Sales Force Management

ACADEMIC EXPERIENCE:

UNIVERSITY OF ILLINOIS Champaign, Illinois
Research Fellow, Department of Business Administration
Examined current theoretical developments in business-to-business marketing, strategy, firm reputation,
and supplier selection, which led to a dissertation on the role of reputation in business partner selection.
- Interviewed senior executives from firms with annual sales ranging from 30 million to 7 billion.
- Ad-hoc advisor to the Industrial Distribution Management Program for the College of
Commerce and Business Administration.
- Advisor to the 1996 University of Illinois National Agri-Marketing Association team.
- Instructor for two semesters in an applied business course in which student ratings facilitated
being listed on the Chancellors' *"Incomplete List of Instructors Rated Excellent By Students."*
- Awarded three year research fellowship by the USDA to examine agribusiness issues.

PURDUE UNIVERSITY West Lafayette, Indiana
Graduate Assistant, Department of Agricultural Economics
Conducted studio interviews of sales executives, managers, and representatives to supplement new
video-based sales course, and previewed sales training video-tapes to assess content quality.
- Regular participant in executive education and development programs.
- Elected by peers as Vice President of the Graduate Student Organization.
- Nominated by faculty to represent the college on a university committee.

INDUSTRY EXPERIENCE:

PRISM CONSULTING (1992 to Present) Pesotum, Illinois
Principal Owner/Director
Independent management and marketing consultant to medium-sized Midwest businesses in
agribusiness, capital equipment, education, insurance, and manufacturing industries.
- Assisted CEO in the strategic selection and acquisition of firms worth 400 million dollars.
- Team leader assessing the impact of informational technology on direct marketing success for
food and beverage products.
- Directed the sale of 7.5 million dollars in real estate for a reinsurance company.
- Developed strategic marketing plan for 300 million dollar asset management firm to attract
institutional investors to diversify into domestic agricultural investments.

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- Project director for fund-raising and development of industry partners for the College of Commerce and the Department of Marketing.
- Developed marketing strategy with senior executive and coached field implementation.
- Created a targeted marketing plan for educational donors in excess of 10 million dollars.

ADVANCE GRADE TECHNOLOGY INC. (1987 to 1991) Livermore, California
Regional Manager
Branch Manager and Sales Representative
Fast-track promotion through a series of increasingly responsible sales, marketing, and management positions. Firm specialized in the automation of heavy equipment with precision grade control technology utilizing laser, sonar, and GPS systems. In final position, directed marketing, sales, and service operations for seven branch offices and two independent distributors in 28 states.
- Youngest member of an executive management team that included the President, and CEO.
- Coached seven branch sales offices to annual sales increases of 25% and 30%.
- Established new accountability and compensation procedures for all regional and branch office employees based on ROS, customer satisfaction, and net profit.
- Opened new branch office, and within two years had built the most profitable domestic branch.
- Top salesperson company wide for two consecutive years, and the first in company history to achieve one million dollars in direct sales.
- Re-established positive company image in troubled Bay-Area sales district.

CASE/IH (1986 to 1987) Logan, Utah
Territorial Sales Representative
Heavy agricultural and industrial equipment sales.
- Increased the sales of a complimentary smaller equipment line by 200%.
- Initiated inventory control and logistics procedures for equipment dealerships.
- Negotiated sales contracts and terms of equipment leases with key accounts.

SELF EMPLOYED (1984-1986) Shelley, Idaho
Partner
Partner in a production agriculture joint venture that included potatoes, grain, and feeder cattle.
- Developed business plan, budget, and capital requirements for new enterprise.
- Assisted partner in generating working capital, daily operations, and marketing of final product to wholesale outlets.

FELLOWSHIPS—AWARDS—SCHOLARSHIPS:
Finalist in the ISBM Doctoral Competition, Penn State University, 1997
Inland Steel Fellowship, University of Illinois, 1997
J.M. Jones Fellowship, University of Illinois, 1996-1997
USDA Agribusiness Fellow, University of Illinois, 1993-1996
Incomplete List of Instructors Rated Excellent By Students, University of Illinois, 1994/1995
Honorable Mention E.B. Knight Journal Award Committee (*NACTA Journal*), 1994
Graduate Student Organization, Vice President, Purdue University, 1992-1993
University Grade Appeals Committee, Purdue University, 1992-1993
"Most Profitable Branch" Award, Advance Grade Technology, 1990
"National Achievement Sales" Award, Advance Grade Technology, 1988/1989
Broadbent Memorial Scholarship, Utah State University, 1985-1986

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Academic Scholarship, Utah State University, 1984
Athletic Scholarship, Ricks College, 1981
Leadership Scholarship, Ricks College, 1980

MEMBERSHIPS:
American Marketing Association, Present
American Agricultural Economics Association, Present
Associated General Contractors of America, 1985-91

OTHER ACTIVITIES:
Elders Quorum President, 1994-1997
Seminar Researcher, From Salesperson to Field Marketer, 1994
Varsity Scout Advisor, 1993-94
Youth Group Basketball Coach, 1993-94
Elders Quorum Instructor, 1991-93
Instructor, Strategic Agri-Marketing Workshop, 1991-92
National Sales Meetings Instructor, Advance Grade Technology, 1990-91
Young Mens Presidency, 1989-91
Sunday School Teacher, 1985/1987-89
Full-Time Church Missionary, 1981-83
Honorary School Board Member, Shelley School District, 1980-81

PERSONAL INFORMATION:
Born in Rigby, Idaho (8/30/62), Married to Tammy Tilley, and Four Children
(Stephanie, Danielle, Alayna, and Tylor)