THE EFFECT OF ALLIANCE IMAGE ON THE RELATIONSHIP BETWEEN CONSUMER INNOVATIVENESS AND NEW PRODUCT ADOPTION

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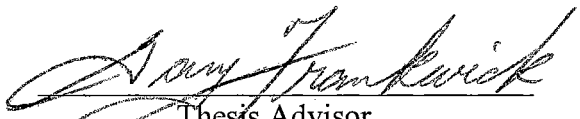

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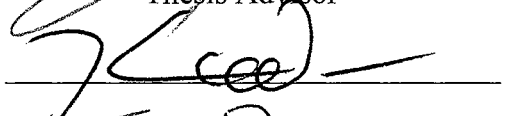

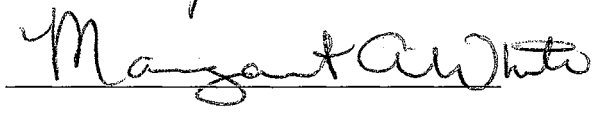

Dean of the Graduate College

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CHAPTER I

INTRODUCTION

One of the most profitable strategies for competitive organizations is placing innovative products in the marketplace and gaining a pioneering advantage over the competition (Boyd and Mason 1999). For many industries, new product development is the single most important factor driving success or failure (Shilling and Hill 1998). "Without innovation, a company will lose ground to its competitors who innovate better and faster" (Lynn and Akgun 1998, p.15). New products provide increased sales, profits, and competitive strength for most organizations (Savidas and Dwyer 2000). Introducing a stream of new products is absolutely essential for most companies' success and long-term growth (Shimp 2000).

Despite the growing necessity to conceptualize and market new products, simply introducing new products does not guarantee product success, since new products are failing at an increasing rate. Once new products reach the marketplace, approximately 35 to 45 percent of them fail (Boulding, Morgan, and Staelin 1997), but this failure rate may be a conservative estimation. Amazingly, some researchers suggest that failure rates may be as high as 60 percent (Shilling and Hill 1998). Still, others speculate that an incredible 80 percent of new products fail. Considering these high estimates, astute companies must explore and pursue viable opportunities to maximize potential success. In an effort to receive favorable evaluations and acceptance in the marketplace, some companies invest heavily and occasionally ally with other companies to share the risks involved in new product development (Shimp 2000).

Company managers have the responsibility, to examine and pursue effective options that increase the likelihood of new product success. There are many dynamics on the demand side and the supply side. Understanding that customers are the reason that organizations exist, is a very crucial consideration in defining and targeting meaningful marketing audiences. The concept of segmentation is simple, yet complex. Separating consumers by demographic characteristics is a popular and relatively simple task. However, grouping a homogeneous subset of consumers based on their underlying predispositions and personality traits offers a greater challenge to marketers. Rogers (1962) initiated a revolutionary and useful system of categorization that classifies the consuming population based on their temporal position in the diffusion of new products. This classification system yielded five segments, based on the time of adoption in the new product diffusion process. The five groups are innovators, early adopters, early majority, late majority, and laggards (Rogers 1962).

Consumer Innovativeness

In general, consumer innovators are the most significant market segment in new product acceptance because they are the first to adopt new products (Hirschman 1980; Mowen, Christia, and Spears 1998). Yet, this critical group of consumers represents only 2.5 % of the potential market. Therefore, identification of this group is crucial, but elusive. It also stands to reason that, in many cases, innovators are the opinion leaders regarding new products. Opinion leaders are those more knowledgeable persons who casually provide advice. Opinion leaders play a key communications role because positive word of mouth influences the acceptance and spread of new products in the

marketplace (Midgley and Dowling 1978; Hirschman 1980). Since innovators may influence the success of new products, as well as the rate of adoption, identifying innovators from non-innovators provides marketers an excellent objective for segmentation. Accordingly, Robertson and Kennedy (1968) suggested that profiling innovators has implications for promotional and market segmentation strategies.

Research on consumer innovativeness reveals two traditional perspectives, product category-specific consumer innovativeness and general consumer innovativeness. Product category-specific innovativeness asserts that consumer innovativeness is based solely on the product category and there is no overlap between product categories (Feldman and Armstrong 1975; Taylor 1977; Gatignon and Robertson 1985). Conversely, general consumer innovativeness asserts that consumer innovativeness is a trait that is generalizable across product categories (Summers 1971; Midgley and Dowling 1978). There are many studies that show evidence of different variables correlating with either product category-specific consumer innovativeness or global consumer innovativeness.

Product Category-Specific Consumer Innovativeness

An information search is almost a prerequisite for product category-specific consumer innovativeness (Kirton 1976). Thus, product category-specific innovators become very knowledgeable about the relevant product category and sometimes serve as the opinion leaders (Summers 1971; Robertson and Myers 1969). To formulate a judgment in a buying situation, a consumer must select, evaluate, and combine information that is available internally or externally (Spence and Brooks 1997).

Accordingly, empirical findings indicate that knowledgeable decision-makers are more selective in the information they acquire.

Expertise

Product category-specific consumer innovators possess greater expertise in the product categories relative to non-innovators. Accordingly, this study proposes that product category-specific consumer innovativeness is positively correlated with expertise. An expert is someone who has acquired domain-specific knowledge through experience or training (Spence and Brucks 1997). Since consumer expertise affects the content and organization of knowledge for a product category (Mitchell and Dacin 1996), experts make more accurate judgments than novices (Spence and Brooks 1997).

General Consumer Innovativeness

Considering certain associations with product category-specific consumer innovativeness, similarly, there are various characteristics indicative of general consumer innovativeness. Early studies attempted to use demographic characteristics to describe consumer innovativeness, such as age, gender, education, and income. Innovators tend to be younger in age, have higher social status, have more favorable financial position, and have a different type of mental ability from later adopters (Rogers 1962). Some researchers in consumer innovativeness (Pessemier, Burger, and Tigert 1967) proposed that differences between innovators and late adopters were related to socioeconomic factors like higher income, house size, employment mobility, and credit purchases. On the contrary, Feldman and Armstrong (1975) reported a very weak relationship between

demographic variables and innovativeness. In broader terms, Summers (1971) suggested that innovativeness may be a function of situational variables and psychological considerations.

Risk Taking

Recent studies, however, suggest that general consumer innovators are venturesome and risk-taking (Foxall 1995). In particular, this study will examine the effect of risk-taking on general consumer innovativeness. Consumers usually seek to avoid risks they perceive as being too great. Perceived risk is a consumer's uncertainty about the consequences of their purchase decisions, and the perception that a product will not do what it is expected to do (Dowling 1986). In addition to risk taking, Steenkamp, Hofstede, and Wedel (1999) observed that several studies have associated innovativeness with optimum stimulation level, independence, extraversion, impulsivity, tolerance of ambiguity, inner-directed (versus other-directed) social character, capacity for status, and flexibility. In addition, Steenkamp, Hofstede, and Wedel (1999) presented evidence that general consumer innovativeness is correlated negatively with dogmatism, conservatism, need for structure, and need for clarity.

Hierarchical Model of Consumer Innovativeness

A suggested resolution to the conflict surrounding the conceptualization of consumer innovativeness is to apply a hierarchical model to general and product category-specific consumer innovativeness (Midgley and Dowling 1978; Goldsmith, Freiden, and Eastman 1995; Mowen, Christia, and Spears 1998). In this approach,

product category-specific consumer innovativeness is a component of general consumer innovativeness. Goldsmith, Freiden, and Eastman (1995) explored a hierarchical model relating general consumer innovativeness, as a global or broad trait, to product category-specific consumer innovativeness, a "domain-specific" manifestation. Following a careful operationalization of these constructs, sufficient evidence was gathered to support a hierarchical relationship between general consumer innovativeness and product category-specific consumer innovativeness (Goldsmith, Freiden, and Eastman 1995). Mowen, Christia, and Spears (1998) took the hierarchical approach a step further by superseding and product category-specific consumer innovativeness by actual personality variables. Theoretically and empirically, this study successfully advanced the conceptualization of a hierarchical model of personality and consumer innovativeness by showing evidence that general consumer innovativeness overlapped product category-specific consumer innovativeness.

Hirschman (1980, p280) suggested that "without innovativeness, consumer behavior would consist of a series of routinized buying responses to a static set of products." Moreover, consumers would be just as homogeneous as the resulting available products. Consequently, "it is the inherent willingness of a consuming population to innovate that gives the marketplace its dynamic nature" (Hirschman 1980, p280). In fact, the innovativeness construct is central to the theory of the diffusion of new products (Midgley and Dowling 1978).

Alliances

Increasingly, in the face of stiff competition, many companies are strategically forming alliances to create new products. Strategic alliances to obtain enabling technologies that can shorten the new product development process (Shilling and Hill 1998). In addition, alliances are growing strategic phenomenon allowing organizations to focuse on their specific areas of expertise and leverage their competitive advantage. Spekman and Sawhney (1990) noted that the motivation for companies to enter into alliances is to obtain strategic advantages. Advantages are gained via access to new markets, and technical information, or by enhancing product value and enhanced market reputation (Spekman and Sawhney 1990).

Organization Image

The success of these multi-firm enterprises is still contingent upon market acceptance of their products. An often-overlooked variable in the market success equation is the concept of organization image. A better understanding of a company's image and how it influences pertinent target markets would allow managers to utilize corporate assets more effectively (Brown 1998). Observing the significance of company image, Yoon, Guffey, and Kijewski (1993) asserted that company image and reputation influence buyers' expectations and purchase intentions. Furthermore, image and reputation may be more important than salient information about a product (Keller and Aaker 1993; Yoon et. al 1993). In essence, corporate image can influence each stage of the decision-making process and, ultimately, overall consumer behavior (Cohen 1963; Keller and Aaker 1992). "Since achieving new product success requires that consumers

undertake a trial purchase of a new product and then become long-term repeat customers, it is important that companies have a favorable image to help induce initial product purchase" (Shimp 2000, p198).

Alliance Image

Due to the growth of new product development by alliances of companies and unavoidable impact of company image on product evaluation, it is important to study the organization image as a combination of companies with various images and how the image affects consumers' product evaluations. An alliance is a cooperative form of organizational structure that centers on core competencies. This creates very important theoretical issues and managerial concerns regarding new product development. These issues affect marketing management, strategies and planning, decision-making processes, market segmentation, target markets and product positioning.

Purpose of This Study

This study addresses five research questions. Does consumer innovativeness affect adoption of new products? If a relationship exists between general and/or product category-specific consumer innovativeness and the likelihood of product adoption, what is the effect of alliance image on this relationship? These questions have relevance for adoption and diffusion, company image and reputation, organizational alliances, innovative consumer behavior, and new product development.

These issues are very important for a variety of reasons. First of all, rapid technological change necessitates faster adoption rates for companies to be profitable.

Companies that are able to accurately and effectively predict, segment, and target innovative customers should maintain a competitive edge. Secondly, consumer innovators may determine the initial success or failure of many new products (Alpert 1994). By definition, they are the first in the marketing diffusion process to adopt new or novel products and services. Thirdly, consumer innovators often affect the rate of diffusion of new products (Rogers 1983).

The research questions are stated formally in the following hypotheses and illustrated in Figure 1:

H1: There is a positive relationship between product category-specific innovativeness and the likelihood of new product adoption.

H2: There is a positive relationship between expertise and product category-specific innovativeness.

H3: There is a positive relationship between general consumer innovativeness and the likelihood of new product adoption.

H4: There is a positive relationship between risk-taking and general consumer innovativeness.

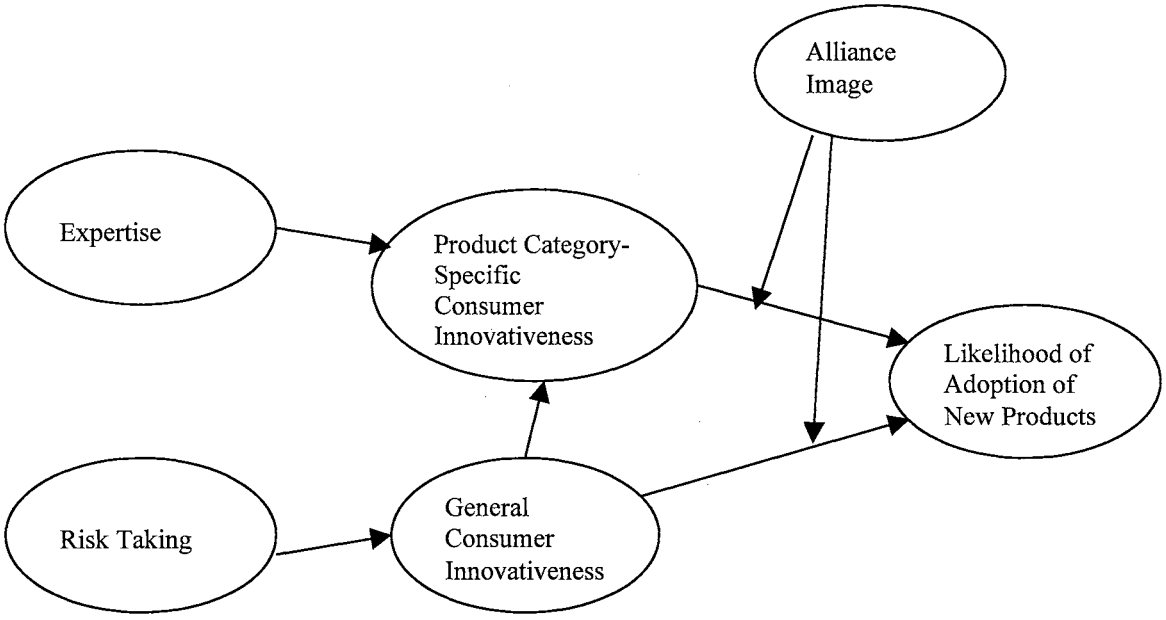
H5: There is a positive relationship between general consumer innovativeness and product category-specific innovativeness.

H6A: When alliance image is strong, the positive relationship between product category-specific innovativeness and the likelihood of new product adoption is stronger, than when it is weak.

H6B: When alliance image is strong, the positive relationship between global consumer innovativeness and the likelihood of new product adoption is stronger, than when it is weak.

Figure 1

Conceptual Model of Innovativeness-Image-Adoption



Study Design

The study incorporated a 2 (Strong/Weak Company Image) x 2 (Strong/Weak Company Image) factorial design. Respondents, who were waiting for flights at a local airport were randomly selected , received instructions, and were asked to complete a brief questionnaire. The site selection was made based partly on the large numbers needed for the analysis. The respondents read fictitious scenarios describing two companies and a description of the formation of an alliance by the two companies. After reading the scenarios, the respondents were asked to complete an attached survey that included

measures for the dependent variable likelihood of new product adoption and were scales to measure the independent variables (product category-specific consumer innovativeness, risk taking, general consumer innovativeness, and expertise). Additionally, the questionnaire requested demographic information such as, gender, ethnicity, age, education, household income, and job position.

Structural equation modeling was used for the statistical analysis. Structural equation modeling is a very useful technique that combines elements of both multiple regression and factor analysis. "Structural equation modeling enables the researcher not only to assess quite complex interrelated dependence relationships but also to incorporate the effects of measurement error on the structural coefficients at the same time" (Hair et. al. 1995, p. 670).

Implications

Consumer innovativeness is not only relevant for marketing theory, but also for marketing practice because companies are relying more and more on successful new product introductions for future growth and profitability (Steenkamp, Hofstede, and Wedel 1999). The realization that innovativeness operates at the heart of the adoption and diffusion process is instrumental in reaping gains and benefits in the marketplace. In essence, achieving initial market penetration would require message appeals targeted to those characteristics representative of innovators.

The adopter classification system suggests that an innovating firm should research the characteristics and behaviors that are specific to consumer innovators and direct communications specifically to them (Kotler 1994). As the diffusion process unfolds,

Robertson and Kennedy (1968) suggested that a revised marketing strategy would be needed after the innovator penetration level was secured in order to appeal directly to the characteristics of non-innovators. In fact, predictability of innovative consumer behavior would support varying of promotional appeals for all new products. Therefore, it is imperative that companies know how to market to the segment of innovators efficiently and effectively. Importantly, adequate knowledge of the effect of company image on consumer innovativeness should provide marketing researchers and practitioners valuable information on the likelihood of adoption of new products.

Study Organization

This dissertation is organized into five chapters. The first chapter serves as an introduction to the study. This chapter introduced the concept of consumer innovativeness affecting new product adoption. Consumer innovativeness was presented utilizing two common perspectives, general consumer innovativeness and product category-specific consumer innovativeness. In addition, a hierarchical view of consumer innovativeness was presented, linking general consumer innovativeness and product category-specific consumer innovativeness together. Risk-taking is predicted as an antecedent of general consumer innovativeness, while expertise is predicted as an antecedent of product category-specific consumer innovativeness Also, the potential moderating effect of alliance image on the relationship between general and product category-specific consumer innovativeness and product adoption was presented.

Chapter two reviews extant literature for each of the prescribed constructs. Based on this review, chapter two develops a suggested theoretical model and presents

applicable research hypotheses. Chapter three contains the research methodology utilized to test the hypotheses. Chapter four presents data analysis and results. Finally, chapter five discusses managerial and theoretical implications of the present study, limitations and offers possibilities for future research.

CHAPTER II

LITERATURE REVIEW

Likelihood of Adoption

Research on adoption and diffusion has produced very important tools for studies in marketing theory and practice. Innovations can be critical to modern companies. Environmental conditions increasingly force organizations to innovate and bring new products and services to market (Frambach et. al. 1998). The need introduce successful innovative products that will be successful is increasingly felt in the light of global competition, more parity products, shorter product life cycles, and increasingly sophisticated and knowledgeable consumers (Boyd and Mason 1999). For many companies, long term prosperity depends on the constant pursuit of product and process innovation (Lynn and Akgun). Since only a fraction of new product ideas are successful, a thorough understanding of factors underlying the innovation adoption decision by potential adopters is necessary.

Evidence has shown that not only do adopter-side variables significantly influence innovation, but supply-side variables have a substantial effect also. Individual adoption decisions are influenced by personal characteristics, perceived innovation characteristics, personal influence, as well as marketing and competitive actions (Gatignon and Robertson 1985). Therefore, the likelihood of adoption of new products or innovations is a result of both the characteristics of the adopter (expertise, risk taking, general and product category specific innovativeness) and the characteristics of the innovation

(alliance image). This review will present research on both sides of the adoption construct.

Kotler (1986) defined adoption as the decision of an individual to become a regular buyer/user of a product. However, adoption is only a part of the process. According to Rogers (1983), the innovation-decision process is the process through which an individual or group passes from first knowledge of an innovation to forming an attitude toward the innovation, to a decision to adopt or reject, followed by implementation of the new idea, and then confirmation of the decision. Rogers (1983) viewed adoption as the decision to make full use of an innovation as the best course of action available.

Gatignon and Robertson (1985) suggested that the adopter-side variables affecting product adoption are level of cognitive processing, uncertainty, and priority acquisition pattern. Frambrach et. al. (1998) proposed the following variables: perceived innovation characteristics, adopter characteristics, network participation, competitive environment, and information. Perceived innovation characteristics were derived from Roger's (1983) depiction of innovations. Adopter characteristics include age and receptiveness. Network participation describes the interaction between members of a social system. Intensity of competition and intensity of an innovation affects the competitive environment. Finally, the extent to which potential adopters of an innovation have processed information on the innovation can be expected to influence the probability of adoption (Webster 1969).

According to Sheth (1981), habit toward an existing practice and perceived risks associated with innovations inhibit the likelihood of adopting new products. Furthermore, he suggested that the strength of habit associated with an existing practice or behavior is

the single most powerful determinant in generating resistance to change. Another major determinant of innovation resistance is the perception of different risks associated with the adoption of an innovation (Sheth 1981). Discontinous innovations are more likely to be resisted than continuous innovations since they entail three types of risks, performance uncertainty, resulting side effects, and aversive consequences. The aversive consequences stem from physical, social, and economic detrimental outcomes.

Based on individuals' perceptions, Rogers (1983) explained the most important characteristics of innovations that help describe their likelihood of adoption: relative advantage, compatibility, complexity, trialability, and observality. Relative advantage is the degree to which an innovation supersedes the idea before it. Compatibility is the degree to which an innovation is perceived as being consistent with existing values, past experiences, and consumer needs. Complexity is the degree to which an innovation is perceived as difficult to understand and use. Trialabilty is the degree to which an innovation may be experimented with on a limited basis. Observability is the degree to which the results of an innovation are visible to others. The elements of relative advantage, compatibility, complexity, trialability, and observality demonstrate that evaluation of an innovation will yield different results depending on the person doing the evaluation. Notably, perception plays a central role in most cases.

According to Gatignon and Robertson (1985), the two basic adoption models are the high cognitive processing "hierarchy of effects" model and the low cognitive processing "low involvement" model. The hierarchy of effects adoption model is to be expected under conditions of: high consumer learning requirements, high innovation costs or high switching costs, high social imitation, or a multiple person

adoption decision within the family or organization. The low involvement adoption model is to be expected under conditions of: low consumer learning requirements, low innovation costs or low switching costs, or low social imitation.

Also, the adoption of an innovation depends on its fit within the existing consumption system and its ability to compete for scarce resources in order to achieve a position in the consumer's priority acquisition pattern. Furthermore, the lower the level of cognitive processing, the greater the impact of advertising and other impersonal marketing sources throughout the adoption process.

The supply side of innovations is characterized by innovation development and marketing strategy (Frambach et. al. 1998). Innovation development determines the superiority or uniqueness of the innovation. Wilson (1999) highlighted two variables, radicalness and relative advantage as primary and secondary attributes, respectively. Radicalness is the extent to which an innovation requires completely new behaviors for the organization and its members. The secondary attribute, relative advantage of the innovation, indicates the extent to which an innovation is perceived as being better than the one that it supersedes (Table 1). An organization's marketing strategy for an innovation determines its positioning, risk reduction, and market support. For example, the image a company portrays is part of the company's position in the market and it ultimately affects the position of its products. The conceptual model for this study is presented in Figure 2.

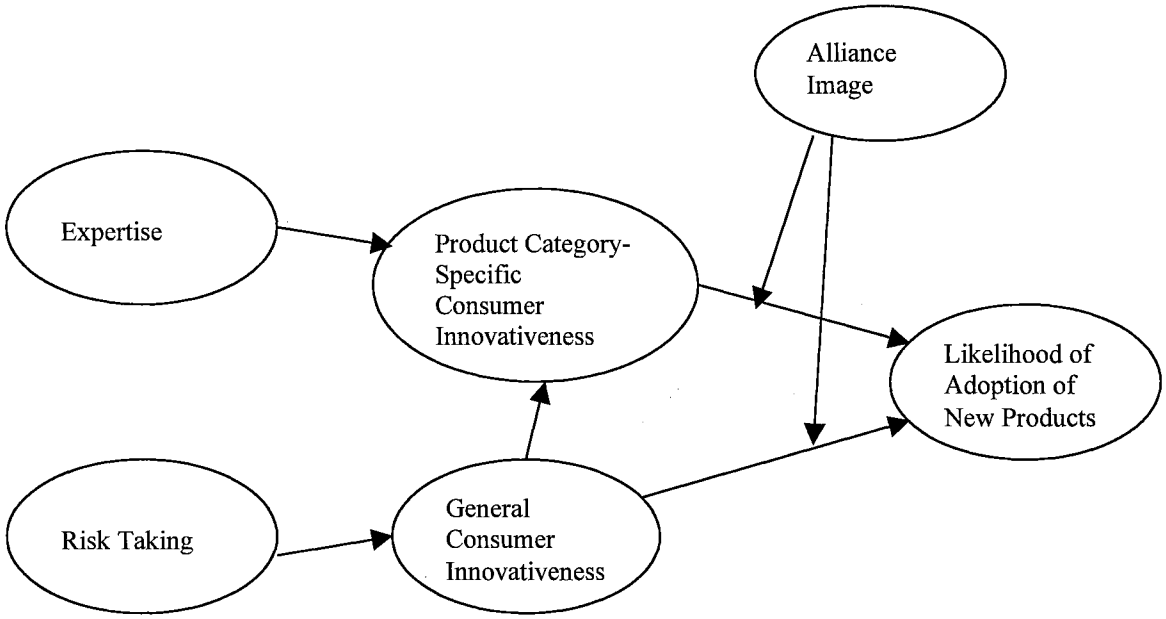
Table 1

Likelihood of Adoption

Study	Independent Variable	Dependent Var.	Contribution
Sheth 1981	Habit, Risk	Innovativeness	Innovation resistance due to habit and perceived risks
Rogers 1983	Trialabilty, Observability, Relative advantage, Complexity, and Compatability	Adoption	Product adoption is based on:Trialabilty, Observability, Relative advantage, Complexity, and compatability.
Gatignon and Robinson 1985	Personal and Perceived innovation characteristics, Personal influence, and Marketing and Competitive actions	Adoption	Adoption is based on supply-side and demand-side variables.
Kotler 1986	None	Adoption	Adoption is the decision of a consumer to become a regular user of a product.
Frambach et. al. 1998	Marketing strategy, Innovation development, Perceived innovation and Adopter characteristics, Network participation, Competitive environment, and Information	Adoption	The supply-side of innovations is characterized by marketing strategy and innovation development.
Wilson 1999	Radicalness and Relative advantage	Adoption	Adoption based on radicalness and relative advantage.

Figure 2

Consumer Innovativeness - Alliance Image Model of Product Adoption



Consumer Innovativeness

One important determinant of an innovation's success is the consumer's beliefs about the viability of the innovation. These beliefs are likely to evolve as the innovation changes and consumers move through the stages of the adoption process (Boyd and Mason 1999). An adequate understanding of the adoption and diffusion of innovations is a critical component of an organization's success. The consumer innovators, the first to buy new or novel products are the smallest segment and arguably the most crucial in the diffusion process. Hirschman (1980) suggested that without the dynamic of consumer innovativeness, consumer behavior would consist of a series of routinized buying

responses to a static set of products. As a consequence, the study of consumer innovativeness has theoretical, as well as practical significance for marketers. The complex nature of explaining consumer innovativeness continues to provide a substantial challenge to marketing researchers. The marketing literature is filled with attempts to define, describe, and identify innovative consumers.

Initially, researchers used demographic variables to predict innovativeness. More recently, the focus has shifted to sociological, product interest and situational factors. Robertson (1971), Pizam (1972), and Engel, Kollat, and Blackwell (1973) tabulated the complex and contradictory nature of the empirical studies relating innovativeness to various constructs, which includes personality, attitudinal, and sociodemographic factors. For those factors, Midgley and Dowling (1978) conducted a literature review citing both positive and negative relationships with innovativeness and many indicating no relationship whatsoever.

In essence, innovators "welcome the new and different" and are sensation-seeking (Kirton 1994, Goldsmith 1984). A significant relationship exists between innovativeness and sensation-seeking, as well as a relationship with uniqueness-seeking (Burns and Krampf 1992). Ostlund (1974) tested five variables to show evidence that socioeconomic status proved to have a positive relationship to innovativeness. Rogers (1962, p. 71) was instrumental in presenting a major conceptualization of innovativeness. He asserted that "innovativeness is the degree to which an individual is relatively earlier in adopting an innovation than other members of his social system". Specifically, innovators were categorized as the first two and a half percent of consumers to try new products. Rogers

(1962) five category classification scheme, based on the sequential time of adoption, included innovators, early adopters, early majority, late majority, and laggards.

Research has shown that the position occupied by innovators is a crucial one. Midgley and Dowling (1978, p. 235) contributed a major conceptualization of consumer innovateveness and expressed innovativeness as "the degree to which an individual is receptive to new ideas and makes innovation decisions independently of the communicated experience of others." Innovativeness may be a function of situational variables, such as income and product involvement, and behavioral considerations (Summers 1971). It may be that situational factors are unique to specific products and product categories, and thereby serve to constrain the individual's innovativeness to particular areas. Concurrently, the consumer's sociological and psychological behavioral make-up influences the basic tendency to innovate.

There is an ongoing interest in innovators in the literature, prioritizing this segment over other groups (Midgley and Dowling 1993). In addition, managers are interested in consumer innovators for various reasons. First, this group of buyers influences the initial success or failure of new products. Communication is one of several variables intervening between innovativeness and observed time of adoption (Midgley and Dowling 1978). Therefore, communication initiated by innovators is vitally important for manufacturers in regard to new product development. Secondly, innovators influence the rate of diffusion of those innovations (Alpert 1994). Innovators risk errors and incur costs to realize potential positive benefits (Foxall 1995). Consequently, they are more likely to try new products and accept the risk of buying an unsatisfactory item.

In the marketing literature, a number of conflicting perspectives on consumer innovativeness can be identified. One such debate involves a social learning perspective and a personality trait perspective. First, a social learning perspective proposes that the cause and stimuli of a person's behavior come from the environment (Subramanian and Mittelstaedt 1991). As a result, some consumers observe the actions of other innovators to develop their own patterns of innovative behavior. For example, Venkatraman and Price (1990) found evidence of demographic differences among innovators and suggested that innovativeness might be socialized. This approach encompasses communication processes that some researchers support as a catalyst for innovative consumer behavior. In support of the social learning perspective, a study of a major automotive innovation led Feldman and Armstrong (1975) to report that personality measures are not good predictors of innovativeness, and any correlation is product specific. Social learning suggests that many human characteristics are developed from others. Pessemier, Burger, and Tigert (1967) suggested that early purchase behavior can be connected to socioeconomic factors.

The personality trait perspective contends that consumer innovativeness is an innate or inherent characteristic possessed to different degrees by all members of society. Midgley and Dowling (1978) proposed that innovativeness is a function of a number of dimensions of human personality. However, this "number" of yet to be determined. Mowen et. al. (1998) found that materialism and the need for arousal were antecedents of consumer innovativeness. In addition to personality characteristics, Midgley and Dowling (1978) surmised that individual situations, product interest, and involvement influence consumer innovativeness as a personality trait. In sum, the social learning personality

perspective describes consumer innovativeness as a socialized characteristic, while the personality trait perspective uses inherent traits to explain consumer innovativeness.

Specificity/Generality Issue in Consumer Innovativeness

A more common debate in marketing concerns whether or not consumer innovativeness is product category specific or a general trait. Some researchers argue that consumer innovativeness depends on the product category, and that there is very little if any overlap between product categories (Feldman and Armstrong 1975; Taylor 1977; Gatignon and Robertson 1985). There exists a plethora of findings on the nature and characteristics of innovative consumer behavior for products and product categories (Table 2). A study by Summers (1971) demonstrated empirical evidence that innovativeness overlaps are greatest between product categories of similar interest. As a result, it was suggested that innovativeness might be a function of situational variables, such as income and product involvement. An important observation is that the higher the number of product categories, the lower the possibility of overlap. The alternative assessment among researchers is that consumer innovativeness is a generalized trait, and that it in fact, does overlap across product categories (Summers 1971; Midgley and Dowling 1978). Midgley and Dowling (1978) proposed that all consumers to some degree present possess an innate innovativeness trait, and it is the interaction with sociological and demographic variables that cause the actualized innovativeness behavior to manifest itself.

Table 2

Consumer Innovativeness

Study	IV	DV	Contribution
Pessemier, Burger, and Tigert (1967) - Analyzed housewives purchase of new branded detergent	57 variables in 8 categories	Early/Late/Nonbuyer	Differences of early and late adopters related to socioeconomic factors: higher income, smaller houses, employment mobility, and minimize credit purchases
Robertson and Kennedy (1968) - Assessed socioeconomic characteristics of innovators in new home appliances	Venturesomeness, Social Mobility, Priviledgeness, Social Integration, Interest Range, Status Concern, Cosmopolitanism	Innovator/Noninnovator	Venturesomeness and social mobility accounted for most of the variance in innovativeness
Robertson and Myers (1969) - Assessed relationship of personality variables to innovativeness	18 major areas of personality	Innovativeness and Opinion Leadership	3 personality variables correlated with innovativeness: self-acceptance, communality, and sociability
Jacoby (1971) - Examined effect of dogmatism	Dogmatism	Innovativeness	Low dogmatic individuals were more likely to be innovators
Summers (1971) - Analyzed relationship between innovativeness and opinion leadership	Opinion Leadership	Innovativeness	Suggested that innovativeness may be a function of situational and behavioral considerations
Darden and Reynolds (1974) - Male innovative behavior examined from the perspective of a multidimensional conceptualization of the innovator	Demographic and socioeconomic; activities, interests, and predispositions	Innovativeness	Kinds of innovators can be determined for groups of products or product categories
Donnelly and Ivancevich (1974) - Demonstrated a methodology for identifying innovator characteristics of new brand purchasers	Social character	Early purchase/Late purchase	Early purchasers were more inner-directed than later purchasers

Ostlund (1974) - Assessed effect of personal characteristics and perception on innovativeness	13 personality characteristics, and perceived innovation attributes	Innovativeness	Perceptual variables found more successful as predictors of the purchase outcome than personal characteristics
Feldman and Armstrong (1975) - Analyzed generality versus specificity of innovativeness	Social, Attitudinal, and Personality; Perceived product characteristics; demographic	Innovativeness	Demographic variables were product specific, and personality measures were not good predictors of innovative behavior
Taylor (1977) - Researched product class use	11 new product purchase behavior	Time of trial	Innovative behavior was very dependent on product class
Dickerson and Gentry (1983) - Adopters and non-adopters were contrasted	Demographics, creativity, experience, and psychographic	Adoption	Experiences with related products were found to play a major role in new purchases
Venkatramman and Price (1991) - Differentiated between cognitive and sensory innovativeness	Need for cognition Need for sensory arousal	Cognitive innovativeness Sensory innovativeness	Cognitive innovativeness related to need for cognition Sensory innovativeness Need for sensory arousal
Midgley and Dowling (1993) - Made predictions about the future behavior a sample of consumers for 6 innovations	Multidimensional measures	Innovative predisposition	Suggested that innovativeness is modified by socially transmitted messages about the innovation, as well as by other situation specific factors
Foxall (1995) - Examined cognitive innovativeness	Risk taking	Cognitive innovativeness	Found correlation between risk taking and cognitive innovativeness
Goldsmith, Freiden, and Eastman (1995) - Explored the role of personality in shaping innovativeness	18 variables for global and domain specific innovativeness	Innovativeness	The association between global innovativeness and new product purchase is mediated by domain-specific innovativeness

Product Category-Specific Consumer Innovativeness

According to Kotler (1994), no one has demonstrated the existence of a general personality trait called innovativeness, and individuals tend to be innovators in certain areas and laggards in others. This study defines product category-specific consumer innovativeness as the willingness to try new items within a certain product domain. In a

study of eleven product classes, Taylor (1977) concluded that innovative behavior is very dependent on product class use. Dickerson and Gentry (1983) chose to concentrate on the early adoption of technological innovations. The authors utilized the specificity approach with research on home computers. A study of a major automotive innovation led Feldman and Armstrong (1975) to report that personality measures are not good predictors of innovativeness, and any correlation is product specific. a very weak relationship between demographic variables and innovativeness. In addition, they proposed Goldsmith et. al. (1995) found weak positive correlations between global innovativeness and the purchase of new products. They concluded that there are stronger correlations between the domain-specific innovativeness measures and the purchase measures. This reasoning leads to hypothesis one.

H1: Product category-specific consumer innovativeness has a direct positive relationship with the likelihood of new product adoption.

Dickerson and Gentry (1983) proclaimed that given the failure to find empirical support for a concept of innovativeness that is generalizable over a wide range of products, it is not surprising that differing profiles of consumer innovators would be found for different types of products. Previous studies indicate that product category innovators tend to be more knowledgeable than non-innovators (Foxall 1995). The Dickerson and Gentry (1983) profile of the home computer innovator proved similar to that of the innovator of other novel products: more educated, an opinion leader, and an information seeker. Innovative consumers must possess the ability to understand and

apply complex technical knowledge (Rogers 1983). They are more inquisitive, and search more widely for information (Rogers and Shoemaker 1971; Kirton 1976; Dickerson and Gentry 1983), some of which may come from company information.

Expertise

This paper asserts that product category experts are likely to be innovators. Cognitive learning is an active process in which people seek to control the information they obtain (Mowen and Minor 1998). Knowledge is gained through the process of cognitive learning. Cognitive structure has two components: the knowledge bits it contains, and how the knowledge is organized (West and Pines 1985). Cognitive learning can be defined as the processes through which people form associations among concepts, learn sequences of concepts, solve problems, and gain insights (Mowen and Minor 1998). Mitchell and Brucks (1996) suggested that the differences in domain knowledge are reflected in various information-processing activities such as problem solving, induction and reasoning, judgment, and recall and recognition. An expert is someone who has acquired domain-specific knowledge through experience and training (Spence and Brucks 1997). As a consequence, experts differ from novices in the amount, content, and organization of their domain knowledge (Chi, Glaser, and Rees 1982).

Product knowledge is the amount of experience with and information that a person has about that product (Brown 1992). This information is stored in long-term memory. In contrast to short-term memory, long-term memory has an essentially unlimited capacity to store information permanently. The information stored in long-term memory tends to be either visual or semantic. According to Mowen and Minor (1998),

memories allow consumers to anticipate the stimuli they might encounter, through the process of retrieval. Retrieval is the action of accessing stored information so that it can be utilized in short-term memory (Mowen and Minor 1998). As a result, consumers can selectively expose themselves to desired stimuli.

Similarly, memory influences attention processes by guiding a person's sensory system so as to focus on particular stimuli (Mowen and Minor 1998). If the information is relevant to the person or activates an orienting response, it will be actively monitored in short-term memory (Mowen and Minor 1998). Thus, comprehension is affected by the expectations and associations elicited in memory by the stimuli encountered. Consumers possessing greater amounts of knowledge can think about a product across a number of dimensions and make finer distinctions among brands. As consumer knowledge increases, consumers become better organized, they are more efficient and accurate in their information-processing, and they have better recall of information (Simonin and Ruth 1998).

One aspect of consumer knowledge is semantic memory. Semantic memory refers to how people store the meanings of verbal material in long-term memory (Mowen and Minor 1998). Information in semantic memory is organized into networks (Lynch and Srull 1982). The network is a series of memory nodes that represent the stored semantic concepts. Each node that is activated represents a memory that is recalled. Five types of information can be stored at the memory nodes: the brand name, the brand's characteristics, advertisements about the brand, the product category, and evaluative reactions to the brand and the ad (Hutchinson and Moore 1984). The total package of associations brought to mind when a node is activated is called a schema. According to

Brown (1992), schemas are "stored frameworks of knowledge about some object or topic and are represented by nodes in semantic memory.

Researchers have found that when new information is inconsistent with an individual's existing schema, consumers engage in more diligent processing and, consequently, have improved memory about the stimulus (Mowen and Minor 1998). When a consumer receives information that deviates from expectation, he or she tends to place more cognitive capacity on the information (Brown 1992). In such a situation, it is more likely that the information will be transferred from short-term to long-term memory (Mowen and Minor 1998).

Recent evidence suggests that a new product is evaluated more favorably when its attributes are moderately incongruent with an activated product category schema than when its attributes are congruent or extremely incongruent with the schema (Perrachio and Tybout 1996). Mandler (1982) theorized that as a consumer encounters a stimuli that conforms to an expectation, it is not arousing. Instead it evokes a mild positive response due to familiarity. By contrast, the disruption of expectations that occurs when incongruity is encountered prompts arousal and cognitive elaboration directed toward making sense of the incongruity (Mandler 1982). When this incongruity is moderate, it can be resolved through assimilation to or generalization of prior knowledge (Mandler 1982).

Knowledge structure is defined as not elaborate when it contains a limited amount of information, has few inter-connections and inferences, and lacks strong affective associations to specific attributes (Mowen and Minor 1998). When individuals lack elaborate knowledge of a product category, schema congruity is predicted to generate

affect such that moderate incongruity will lead to more favorable attitudes than will either congruity or extreme incongruity (Brown 1992). Perrachio and Tybout (1996) emphasized that when consumers possess elaborate knowledge about the category, their evaluations are unaffected by the level of congruity, but rather are influenced by their schema-based associations to specific product attributes. An elaborate knowledge structure is one that is extensive, affords complex inferential processing, and includes extreme affect toward product features. As knowledge increases, expertise increases (Bettman and Park 1980).

A product-class expert is someone who has the knowledge necessary to select an appropriate product for a particular situation (Brucks 1985) and the knowledge necessary to use and maintain products from that product class (Mitchell and Dacin 1996). Mitchell and Dacin (1996) proposed that, relative to novices, experts should have more knowledge about performance attributes. In addition, they should have more knowledge about different physical components of products, and about how physical attributes of products affect performance attributes. Also, experts should have exposure to more information about product class, think more about the product class, and be more likely to acquire systematically product-class knowledge than novices.

There are numerous studies differentiating between novices and experts (Table 3). Subjective/objective-knowledge factors are the most appropriate measures of consumer expertise (Mitchell and Dacin 1996). One finding with widespread support is that experts are more confident than novices (Mahajan 1992). Spence and Brucks (1997) reported that relative to novices, experts select fewer, but more diagnostic information inputs, and are more consistent when evaluating nonquantified inputs. Experts categorize problems on

the basis of solution procedures or underlying concepts. Thus, experts use efficient top-down strategies, starting with known quantities to deduce unknowns. As a result, experts make more accurate and tightly clustered judgments than novices, and are confident in their decisions.

Table 3

Expertise Table

Study	IV	DV	Contribution
Bettman and Park 1980	Knowledge	Expertise	As knowledge increases, expertise increases.
Chi, Glaser, and Rees 1982	Domain knowledge	Expertise	Experts differ from novices in the amount, content, and organization of their domain knowledge.
Mandler 1982	Expectations	Expertise	Stimuli encountered by consumers that conforms to an expectation are not arousing.
Brown 1992		Knowledge	Schemas are "stored frameworks of knowledge about some object or topic" and are represented by nodes in semantic memory.
Brucks 1985	Product class knowledge	Information search behavior	Objective knowledge associated with seeking information about a greater number of attributes.

Stanford 1985		Information processing	Deepest level of information processing uses knowledge to understand the meaning or significance of the stimuli.
West and Pines 1985		Cognitive structure	Cognitive structure has two components: the knowledge bits it contains, and how that knowledge is organized.
Mahajan 1992		Expertise	Experts are more confident than novices.
Mowen and Minor 1998			Memories allow consumers to anticipate the stimuli they might encounter.
Mitchell and Dacin 1996	General knowledge, content of knowledge, organization of knowledge, reasons for choice	Consumer expertise	Consumer expertise affects the content and organization of knowledge for a product class.
Perrachio and Tybout 1996	Schema activated, target attribute, processing instructions, prior knowledge	Product evaluation	When consumers possess elaborate knowledge about the category, their evaluations are unaffected by the level of congruity but rather are influenced by their schema-based associations to specific product attributes.

Spence and Brucks 1997	Problem characteristics, expertise	Judgments	Experts make more accurate and tightly clustered judgments than novices.
Feltovich, Ford, and Hoffman 1997		Expertise	Expertise involves both general and specific processes, as well as knowledge and the ability to organize it.
Flynn and Goldsmith 1999		Subjective knowledge	Developed a 5-item reliable and valid self-report measure of subjective knowledge

Consumer innovators are information seekers (Kirton 1994). Rogers (1983) asserted that innovators seek more information than others do and have greater knowledge of innovations. As a result, innovators possess more complex cognitive structures (West and Pine 1985) than non-innovators. This is analogous to the expert-novice dichotomy. Formally, this relationship is reflected in hypothesis two.

H2: There is a positive relationship between expertise and product category-specific consumer innovativeness.

General Consumer Innovativeness

In an alternative perspective to product category-specific consumer innovativeness, Midgley and Dowling (1978) proposed that innovativeness is

generalizable across products. This study defines general consumer innovativeness as the overall willingness to try new or novel experiences and products. Although Robertson and Myers (1969) found the interrelationships of innovativeness by product categories statistically significant, they insisted that the correlations were pragmatically low. Robertson and Myers (1969) disputed the discussion among marketers which implicitly assumes that innovativeness is a general trait possessed by the individual, by using several personality characteristics to study new product purchases across three product categories: appliances, clothing, and food. They found three personality variables: self-acceptance, communality, and sociability correlated with total innovativeness.

As a proponent of generalizability regarding the study of innovativeness, Jacoby (1971) conducted a longitudinal study across fifteen product categories and found that low dogmatic individuals tended to make significantly more innovative selections than high dogmatic individuals. Summers (1971) supported the theory of innovator overlap by category. His study contained the following product categories: packaged food products, household cleansers and detergents, women's clothing fashions, cosmetics and personal grooming aids, small appliances, and large appliances. The study reported that substantial overlap of innovativeness was demonstrated for a number of combinations of product categories.

According to Foxall (1995), innovators are likely to be broad categorizers at the risk of being dissatisfied. In search of new products, innovators tend to have an orientation beyond the community (Robertson and Kennedy 1968). Since innovativeness influences a consumer's tastes, preferences, and shopping habits, it should prove interesting to predict how innovativeness affects the likelihood of adoption of new

products based on perception of various marketing stimuli. Likewise, Gatignon and Robertson (1985) studied individual adoption decisions and suggested that marketing actions, as well as, personal characteristics influence a consumer innovator's adoption decisions. According to Kirton (1983), innovators are venturesome and become bored with routines. They seek novelty and stimulation in discontinuous change and are uninhibited about challenging rules and procedures. Rogers reported that innovators possess substantial resources to absorb the possible loss due to an unprofitable innovation (1983). They are more willing to take the financial, performance, opportunity and social risks associated with buying and trying an innovation (Kirton 1976; Rogers 1983; Gatignon and Robertson 1985; Foxall 1995). This discussion suggests hypothesis three.

H3: There is a direct positive relationship between general consumer innovativeness and the likelihood of new product adoption.

Risk Taking

Perceived risk is a consumer's perception of the overall negativity of a course of action based upon an assessment of the possible negative outcomes and of the likelihood that those outcomes will occur (Dowling 1986). Accordingly, risk taking is the propensity to venture into situations that present a high degree of uncertainty. In general, consumers continually encounter situations that involve uncertainty and the possibility of negative outcomes. Actually, all decisions in the marketplace involve at least some degree of uncertainty or potential that the product will not provide the expected benefits. Seven types of risks can be identified involving consumer behavior (Mowen and Minor 1998):

financial, performance, physical, psychological, social, time, and opportunity-loss. It is extremely important for marketing managers to understand these risks.

Financial risk is the possibility that the outcome will harm the consumer financially, pay too much, or miss buying something else. Performance risk is the possibilities that the product will not perform as expected, or not perform at all. Physical risk is the possibility that the product might be harmful or unhealthy. Social risk is the possibility that friends, relatives, or significant others may not approve of the purchase. Time risk is the possibility that the product may require excessive time to buy, maintain, or return to the place of purchase. Opportunity-loss risk is the possibility that by taking one action the consumer will miss out on doing something else he or she would prefer to do.

Most consumers tend to be risk averse, in an attempt to avoid risks they perceive as being too great when making purchase decisions. This tendency towards risk aversion is even greater for new products (Sheth 1981).

Sheth suggested that perceived risks associated with innovations inhibit new product purchase. Innovations that are discontinuous are likely to be resisted more than continuous innovations since they entail all three types of risks, performance uncertainty, resulting side effects, and aversive consequences (physical, social, or economic). Innovators are able to cope with the higher levels of uncertainty about an innovation than other adopter categories (Rogers 1983, p22). This discussion suggests hypothesis four.

H4: There is a positive relationship between risk-taking and general consumer innovativeness.

Hierarchical Consumer Innovativeness

Recently, consumer innovativeness research has suggested that innovativeness is a product category-specific trait preceded by a general trait (Goldsmith, Freiden, and Eastman 1995; Mowen, Christia, and Spears 1998). This hierarchical conceptualization unites the two traditional approaches of product category specific consumer innovativeness and general consumer innovativeness. Midgley and Dowling (1978) broke from the norm in consumer innovativeness research by proposing that different types of innovativeness co-exist within an individual. The researchers recognized the possibility of various abstractions of innovativeness existing simultaneously within a consumer.

Midgley and Dowling (1978) discussed three levels: innate innovativeness, specific innovativeness for a product category, and specific innovativeness for a single product. They proposed the highest level of abstraction, innate innovativeness, as a broad, abstract personality trait, defined as "the degree to which an individual makes innovation decisions independently of the communicated experience of others" (Midgley and Dowling 1978, p. 235).

Continuing towards the middle level of abstraction, specific innovativeness for a product category represents multiple behaviors in a product category or specific domain. At the most concrete or observable level is actualized or specific innovativeness for a single product, which interacts with various situational variables (e.g., interest, communication, financial resources). Although Midgley and Dowling (1978) did not support their reasoning empirically, the conceptualization laid the foundation for further empirical research. Goldman, Freiden, and Eastman (1995) operationalized this concept with the evidence of studies in personality research.

Goldman, Freiden, and Eastman (1995) proposed a model that included the ideas of a global or general personality trait of consumer innovativeness, domain or product category-specific innovativeness, and actual innovative behavior. They suggested self-report measures for each. The authors were able to empirically unite theories in both the personality and the marketing literature in testing the role of personality in new product adoption, using the General innovativeness-Product category specific-New product purchase model. Mowen, Christia, and Spears (1998) extended these findings with additional research by applying four levels of a hierarchical model of personality to consumer innovativeness.

The four levels of traits were cardinal traits, central traits, superordinate and subordinate surface traits. In Mowen et. al.'s (1998) scheme, general consumer innovativeness and product category-specific consumer innovativeness, correspond to superordinate and subordinate surface traits. First, cardinal traits are conceptualized as the basic, underlying predispositions of individuals that arise from genetics and early history of people. Cardinal traits are predictive of central traits and should have general application across consumer contexts. Second, central traits are expressed as enduring dispositions to act that are cross-situational. Central traits emerge from the interplay of cardinal traits, from the culture in which an individual lives, and from the learning history of the individual.

Third, surface traits exist at the narrowest level and represent individual differences in behavioral tendencies within particular situational contexts. In consumer settings, surface traits measure predispositions to act within particular behavioral settings involving the consumption of services, goods, and ideas. Within surface traits, two levels

are identifiable, superordinate and subordinate traits. At the superordinate level, global surface traits operate within specific situations. For this study, general consumer innovativeness is representative of a superordinate trait. Essentially, superordinate surface traits capture enduring behavioral tendencies that result from the interaction of psychological traits with situations. Finally, the subordinate level prescribes that category-specific traits operate with respect to specific product types. Subordinate surface traits capture enduring behavioral tendencies that result from the interaction of psychological traits, situations and behavioral/attitudinal referents. In this study, product category-specific innovativeness is the representative subordinate surface trait.

Similar to Goldman, Freiden, and Eastman (1995), the research by Mowen, Christia, and Spears (1998) showed evidence of a mediating effect of product category-specific innovativeness between general consumer innovativeness and new product purchase. In the Mowen et. al. (1998) paper, the general measure of consumer innovativeness accounted for a large amount of variance for product category-specific consumer innovativeness for two highly disparate categories of products, food and electronics. In addition, the article noted that the central traits were unnecessary in predicting behavior. Also, the findings suggested that complete mediation was the best model. This suggests hypothesis five.

H5: There is a positive relationship between general consumer innovativeness and product category-specific consumer innovativeness.

Organization Image

People buy brand products not only because of their inherent qualities, but also because of a bias, a disposition toward products of selected organizations. Consequently, the image of the organization affects people's selection or rejection of the products. Alliance image is a natural extension of company image. However, research on alliance image is sparse. Therefore, this study will review the literature on company image and make the logical connection to alliance image.

In a seminal paper on corporate image, Martineau (1958) suggested the existence of multiple corporate personalities. Hardy (1970) suggested that people give corporations human attributes, and delineated four types of marketing images: corporate, store, product, and brand. Carlson (1963) made the interesting assertion that corporate image is the way that corporations are perceived by persons having no face-to-face relationship with them. Early literature on organization image expressed that people tend to "humanize" companies, and attribute personality characteristics to them, such as being "mature," "liberal," "friendly," and so on. Some authors discussed the concept as a person's "perception" (Carlson 1963), or a mental "picture" or "portrait" of an organization (Hardy 1970). Others incorporate evaluations, feelings (Dowling 1986), and "associations and meanings" an individual has about an organization.

Corporate images provide customers a means of simplifying information processing. They are selectively perceived mental pictures about the organization. In many cases, consumers lack both the capacity and the inclination to gather accurate information about the enterprise, hence corporate images serve as useful substitutes for such concrete knowledge (Dowling 1986). Images are so powerful, they have the

capacity to replace reality. Gregory (1991) described company image as the combined impact of planned and unplanned, visual and verbal components operated by the company. Furthermore, it is anything and everything that influences how a company is received and perceived by any and all of its target publics or by a single customer.

In this study, organization image is defined as all the information about a company that a person holds (Brown and Dacin 1997). This description of organization image includes perceptions, inferences, and beliefs about an organization. In addition, this definition includes an individual's knowledge of his or her prior behaviors with respect to the organization, and information about the organization's prior actions. Also, organization image includes moods and emotions experienced by the individual with respect to the organization, as well as, overall and specific evaluations of the organization and its perceived attributes.

According to Brown and Dacin (1997), the consequences of company image for consumers studied by marketing researchers largely center around effects on product responses. The responses studied included actual product purchase and use. If it is important to be concerned with the psychological overtones and impact on buyer attitudes of the company's individual brands, it also seems important to be concerned with these factors as they affect the company itself (Martineau 1958). Brown and Dacin (1997) found contrast effects when a good company introduces a bad product, or if a bad company introduces a good product. They showed evidence that the evaluation of a company can be negatively related to evaluation of a new product from the company if there is sufficient discrepancy between the evaluative implications of corporate associations and product attributes.

Not only does company image affect post-purchase evaluation, company image can influence the perceptions of specific product attributes prior to purchase (Brown 1994). This is especially true for new products (Darby and Karni 1973). Belch and Belch (1987) found an effect of company image on purchase intentions or product use. Basically, when consumers cannot adequately gauge product attributes, they can and do draw inferences from the company producing the product. Siomkos and Kurzbard (1994) showed that a good reputation can lower perceived product risk and lower the likelihood of adverse effects on future purchases from a company in a product-harm crisis. According to Martineau (1958), any attributes of a product will be filtered through an emotional lens, therefore, it is very important for the corporate image to be liked. Table 4 summarizes these results.

Reasonably, it should prove worthwhile to use images not only to analyze and study single companies, but combinations of companies, as well. The concept of image can be viewed hierarchically. A hierarchical view of the various levels of image can be used to relate its significance for marketing practitioners and researchers. First, there is product image, the way customers view individual items in the marketplace (Schmitt, Simonson, and Marcus 1995). In the cases of self-image product image congruency, consumers are more concerned with a new item's compatibility with their self-images than they are with its operating features or physical benefits (Holak and Lehmann 1990). Second, there is brand image for products, the way people view a specific brand (Barich and Kotler 1991; Schmitt, Simonson, and Marcus 1995). Third, there is corporate or organization image, the way people view the whole corporation/organization, including its products and brands (Dowling 1986; Schmitt, Simonson, and Marcus 1995; Brown

1998). Since an image is the total impression an entity makes on the mind of others, it can be applied to anything, a physical object as well as an intangible concept (Dichter 1985), one can extend the concept of image to the next level. Since an organization can be a single company, a large corporation composed of multiple business units, or multiple companies in an alliance, organization image refers to any of these forms of business. In this study, organization image is the same as alliance image. Since corporate/organization image is an overall evaluation of the corporation with its many business units, alliance/organization image is an overall evaluation of the combination of companies composing the alliance.

Table 4

Organization Image

Study	Independent Variable	Dependent Variable	Contribution
Martineau 1958	None	None	Corporations have a distinct personality.
Bayton 1959	None	Corporate Image	The sum total of "personality" characteristics can be referred to as corporate image.
Spector 1961	6 basic dimensions	Corporate Image	Dimensions prioritized in importance by consumers: dynamic, cooperative, business-wise, character, successful, withdrawn.
Cohen 1967	Quality products, dependable, cooperative, Quality conscious, Accurate, Able psnl, Ethical, Good values, Diversified line, Helpful	Corporation Image	Five differentiating characteristics: dependable, leader, conservative, quality-consciousness, and good values.

Enis 1967	3 pairs of characteristics: Dissonance-Consonance, Insignificance-Significance, and Intangibility-Tangibility	Image	A 3-dimensional model encompasses image characteristics of any entity and thus can be applied to the study of all images.
Hardy 1970		Image	Mental "pictures" of firms
Pharoah 1982	Personal experience, distribution, and usage.	Corporate Image	Corporate image based on personal experience at local levels, and on distribution and usage on a wider scale.
Dowling 1986	Organizational culture, company policies, marketing communications, interpersonal communication, product experience, and support.	Company Image	Corporate images, affected by factual and imaginary company practices, are formed by company personnel and external groups.
Elbeck 1988		Image	Image management is crucial to strategic management, acting as a powerful public support vehicle backing objectives such as resource funding, employee quality of working life, satisfaction, prestige, and accreditation.
Johnson and Zinkhan 1990	Corporate personality and Corporate identity	Company Image	Corporate image is an impression that is derived partially from corporate personality and corporate identity.
Gregory 1991		Company Image	Company image is the combined impact of planned and unplanned, visual and verbal components operated by the company.
Barich and Kotler 1991		Image	Images are not always accurate, yet, they influence the selection of organizations.
Brown 1998	4 Antecedents (characteristics of the company's products and services, corporate communications, 3rd party communication, and a general business type	Corporate Association as a generic label for all information about a company.	4 key antecedents and 2 primary categories of consequences (product responses and responses to the company).

Alliances

Much of the current academic research and practitioner literature focuses on individual brands that have an independent and distinct identity. Companies find themselves in a double bind. Although they must innovate consistently to remain competitive (Savidas and Dwyer 2000), innovation remains risky and expensive. A growing strategic approach to achieving competitive advantages is through the increasing popularity of alliances, which allows organizations access to proprietary markets, scale economies, and competence through collaboration (Larsson et. al. 1998). In today's marketplace, interbrand competition is being augmented by interbrand cooperation in a variety of corporate alliances (Samu, Krishnan, and Smith 1999). This organizational form leverages a firm's unique skills with the specialized resources of its partners to create a more potent force in the marketplace (Bucklin and Sengupta 1993). Venturing into alliances can allow partnering organizations collective benefits that can be created faster, at less cost, with greater flexibility, and with less risk than competing alone (Koh and Venkatraman 1991).

Strategic alliances are interfirm cooperative agreements aimed at achieving competitive advantage for the partners (Das and Teng 1999). Alliances potentially allow partnering organizations to realize synergy through sharing operations such as R&D, manufacturing, distribution, sales, and advertising (Das et. al. 1998). Such alliances are usually forged when any single company finds it either too difficult or too costly to pursue worthwhile business objectives on its own (Das and Teng 1999). Much of the work of strategic planners involves determining the best way to expand the company's

operation into new markets (Kotler 1994). Effective and efficient alliances allow organizations to garner greater sales impact at reduced cost.

Osborn and Hagedoorn (1997) suggested that the study of alliances is a chaotic research field, replete with multiple theories, research designs, and units of analysis. The authors reflected on the origins of the alliance concept by recalling an event when twenty Greek city-states formed an alliance to defeat Persia around 448 BC. The basis of the original concept and its objectives parallel well with today's marketplace, whereby two organizations unite to battle, thwart, and/or subdue a more powerful rival organization. The notion of joining forces with like-minded allies is fast becoming one of the big ideas in marketing, especially among medium-sized firms who find themselves facing more powerful rivals wielding bigger budgets for market research, new product development and marketing (Mitchell 1998). Researchers in economics and sociology studied the significance of alliances in the 1960's (Hymer 1960). Since then, its complexities have become a multidisciplinary research challenge. There have been mixed expectations concerning alliances.

Many early estimates suggested that alliances were but a temporary port of convenience for partnering firms, subject to a quick death (Mitchell 1998). However, it is now recognized that new alliances may be no more prone to die than other new organizations (Park and Ungson 1998). The key is to take the cliché of "think win-win" and make it work (Mitchell 1998), by matching the combined strengths of partners to specific market needs and opportunities (Gibson 1993). All partners must work together to make it succeed (Chan and Heide 1993). Marketing alliances offer fast-track growth for low, upfront investment, for those who get them right (Mitchell 1998).

According to Kotler (1994), there are four types of marketing alliances. First, there are product and/or service alliances. This type of arrangement has several variations from two product companies, to a product and service company, to two service companies. Second, there are promotional alliances. In this situation, one company may agree to carry a promotion to another company's product or service. Third, logistic alliances exist when one company offers logistical support services for the product of another company. Fourth, there are pricing collaborations. Here one or more companies join in a special pricing collaboration. This occurs when hotel chains and rental car companies combine to offer mutual price discounts. Essentially, organizations should find partners that complement their strengths and offset their weaknesses. A new or unknown brand could ally with one that is well known (e.g. NutraSweet and Coca-Cola), or two or more well-known brands could form an alliance (e.g. Lexus and Coach).

Das, Sen, and Sengupta (1998) categorized alliances into two types, technological and marketing. Technological alliances are concerned with cooperation in upstream value chain activities such as R&D, engineering, manufacturing and production. Conversely, marketing alliances refer to cooperation in downstream value chain activities such as sales, distribution and customer service (Hagedoorn 1993).

Reasons for alliance formation

Several trends contribute to the increasing popularity of alliances. A few of the factors are intensified foreign competition, shortened product life cycles, soaring cost of capital, including the cost of research and development, and ever-growing demand for new technologies (Vyas, Shelburn, and Rogers 1995). Alliance formation is a very

important strategy for many companies. Partner match calls for the creation of alliances in which the chosen partners are similar in management style and company culture (Bucklin and Sengupta 1993). Domain similarity and goal compatibility enhance the effectiveness of interorganizational participation (Ruekert and Walker 1980). Indeed, alliances are formed for a variety of reasons, ranging from a desire to gain mutual access to proprietary markets to the attempt to encourage affect transferal (Rao, Qu, and Ruekert 1999). Furthermore, alliances can be used to achieve brand awareness and brand knowledge goals more effectively by leveraging the strengths of established partners and sharing costs (Park, Jaworski, and MacInnis 1986). Das et. al. (1998) suggested that companies enter into alliances in search of valuable resources that they themselves lack. Dowling et. al. (1996) asserted that companies are motivated to form or exit alliance relationships to gain or preserve control over resources.

Forming alliances with other firms has become a strategic tool used by many companies to attain development and growth objectives (Rao and Ruekert 1994). Koh and Venkatraman (1991) viewed alliance formation as a value-creating mechanism. Companies are enticed by alliances so that they can gain fast access to new technologies or new markets. In addition, companies seek to benefit from economies of scale in joint research and production, tap into sources of know-how located outside the boundaries of the organization, and share risks for activities that are beyond the scope of the capabilities of a single company (Powell 1990). Companies sometimes may enter into alliances because they enable partners to share the development risks of rapidly changing technologies (Bucklin and Sengupta 1993).

Each potential ally considers a different set of benefits and costs to arrive at its decision (Koh and Venktraman 1991). Moreover, according to transaction cost theory, a company evaluates an alliance strategy to determine if the potential benefits exceed the corresponding costs. However, this cost-benefit analysis should be viewed for the long run. Kogut (1988) explained that companies enter into alliances because of long-term strategic considerations, regardless of immediate cost-benefit considerations. Alliances give manufacturers entry into new geographical markets or customer segments, in effect increase product demand (Adler 1966). Also, in some cases, alliance partnerships may result in demand growth. This occurs when market development activities encourage infrastructure development for manufacturing and distribution in new industries (Harrigan 1988).

A strategic behavior perspective of alliances proposes that the selection of partners be made in the context of competitive positioning in the face of rivals. If this is the case, alliance partners will be chosen to improve the competitive positioning of the parties, whether through collusion or through depriving competitors of potentially valuable allies (Kogut 1988).

Benefits of an alliance

Although forming strategic alliances is fairly complex, it has the advantage of much lower cost and speedier consummation than start-ups and acquisition. An alliance can reduce the costs associated with negotiating, coordinating, and monitoring interfirm transactions and governance (Williamson 1989). Alliances provide organizations with several benefits in addition to achieving more global coverage: gaining access to new

technologies, entering "blocked" markets, reducing required investment, and gaining access to a brand name or customer group. Ultimately, synergistically combining complementary skills should permit alliance superiority when the whole becomes greater than the parts.

Costs of an alliance

Although alliances provide many advantages and benefits, they are not a panacea. Strategic alliances do not always guarantee success. Some studies show that as many as 70% of alliances may come to an unsatisfactory ending (Kotler 1994). Therefore, it is beneficial for organizations to know what types of alliances are most likely to succeed. Alliances involve both explicit costs, such as the cost of shared operations, and implicit costs, for negotiating, monitoring, and controlling exchange transactions (Williamson 1989). The first direct cost is often a royalty fee (Rao and Ruekert 1994). A second cost component is the opportunity cost associated with a particular relationship (Rao and Ruekert 1994), since cooperation in alliance relationships is subject to opportunistic behavior by one or both partners (Spekman and Sawhney 1990).

There are managerial costs to operating this type of hybrid organization. Most managers are trained to develop plans, operate, lead, and control traditional hierarchical organizations. Usually, there is very little formal training preparation for the management of alliances. According to Koh and Venkatraman (1991), there are three potential costs: coordination costs, erosion of competitive position, and the creation of an adverse bargaining position. Coordination costs result from the need for ongoing coordination

between partners, which may be difficult to achieve when they have divergent interests (Moxon and Geringer 1985). The erosion of competitive position occurs when a competitor becomes more formidable through the transfer of proprietary expertise and market access as well as the lowering of entry barriers (Bresser 1988). The creation of an adverse bargaining position may occur if one partner is able to capture a disproportionate share of the value a joint venture creates because the other partner has an adverse bargaining position resulting from specialized and irreversible investments (Balakrishnan and Koza (1988).

Implications for alliances

Alliances, also, have implications for global marketing. According to Kotler (1994), even giant companies, such as AT&T, IBM, Philips, and Siemens, often cannot achieve leadership in home countries or globally without forming strategic alliances with domestic and/or multinational companies that complement or leverage their capabilities and resources. Conducting business in a different country may require the firm to license its product, or form some other type of alliance with a company within the particular host country. Resultantly, the organizations that form the best alliances become the most successful.

Simonin and Ruth (1998) showed that brand alliances of various types significantly affect the respective partnering brands (Table 5). In addition, the spillover effects do not affect the partners equally. When two highly familiar brands ally, they experience equal spillover effects. Brands less familiar than their partners experience stronger spillover effects than their partners. Furthermore, partners do not necessarily

contribute equally to the alliance. Brands less familiar than their partners contribute less to the alliance than their partners. However, when two highly familiar brands ally, both contribute equally to the alliance. Importantly, prior attitudes towards the partner brands affect attitudes toward the alliance (Rao, Qu, and Ruekert 1999). Therefore, a consumer's preconceived ideas and predisposition, based on partner or company image may affect the behavior towards an alliance established by the partners. Alliances can serve as signals of quality when an individual brand is unable to successfully signal quality itself (Rao and Ruekert 1994).

Table 5

Alliances

Author(s)	IV	DV	Findings
Kotler 1994	None	Alliances	4 types of alliances: Product, promotional, logistic, and pricing.
Park et. al. 1996	Evaluation, Attribute salience, Attribute performance	Branding alliances	Attribute-level complementarity between the header and modifier brands is a more important factor in the success of the Composite Branding Alliance strategy than the attitudinal favorability of the modifier brand.
Simonin and Ruth 1998	Pre-Attitude towards Brand A/B, Product fit, Brand fit	Attitude toward brand alliance	Brand alliances have the potential to modify subsequent attitudes towards partnering brands.
Rao et. al. 1999	Credibility of signal, observability of quality, type of signal	Perceived quality	Consumer's quality perceptions are enhanced when a brand is allied with a second brand that is perceived to be vulnerable to consumer sanctions.

Samu et. al. 1999	Consumer Involvement	Awareness, accessibility and attitude	Complementarity between featured products, type of ad processing & differentiation strategy are important factors in determining ad effectiveness

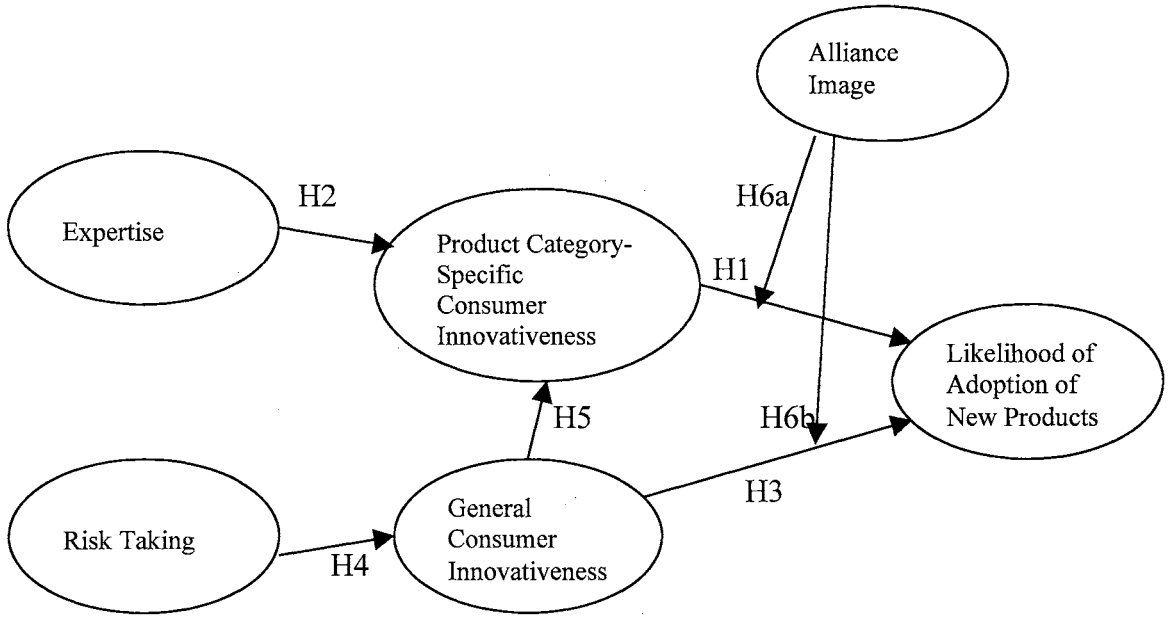
Although images are not always accurate, they influence company selection (Barich and Kotler 1991) for consumers. As markets grow more competitive, companies must design their offers and images to be more appealing. Images are comparable to the "placebo effect" in medicine (Dichter 1985), whereby a drug's effectiveness can be altered by the aura that surrounds it. Thus, when consumers have more information or knowledge on which to make a purchase decision, they may rely on the image of the alliance/organization that made or sold the product to indicate quality and risks associated with the purchase of the product. Since product category-specific consumer innovativors are expected to be knowledgeable (experts) of the product, it is likely that these consumers will not be affected by the image of the alliance/organization that made the product. However, general consumer innovators are likely to be less knowledgeable of the product, and therefore, more likely to rely on other evidence for product quality such as alliance/organization image. This effect is stated formally in hypothesis six and illustrated graphically in Figure 3.

H6A: When alliance image is strong, the positive relationship between product category-specific innovativeness and the likelihood of new product adoption is stronger, than when it is weak.

H6B: When alliance/organization image is strong, the positive relationship between global consumer innovativeness and the likelihood of new product adoption is stronger, than when alliance/organization is weak.

Figure 3

Conceptual Model of Innovativeness-Image-Adoption with hypotheses



CHAPTER III

RESEARCH METHODOLOGY

The previous chapter discussed the significance of new product adoption, and how alliance image and consumer innovativeness influences it. The importance of new product development has increased steadily over the past few decades, and is now a dominant driver of competition in many industries (Shilling and Hill 1998). Based on this trend, the ultimate success of new product development depends as much on customer acceptance as on technological breakthroughs (Holak and Lehmann 1990).

This chapter aims to analytically link innovative consumers' new product adoption behavior to their image of those organizations involved. A critical element in the evolution of a fundamental body of knowledge in marketing, as well as for improved marketing practice, is the development of better measures of the variables with which marketers work (Churchill 1979). This chapter analyzes the important question of whether consumer innovativeness moderates the relationship between alliance image and new product adoption. First, a series of pretests were run to create a valid and reliable scale for high tech company image. Next, existing scales were used to measure likelihood of adoption, general and product category-specific consumer innovativeness, expertise, and risk taking. The data were gathered using a mall intercept technique. The study manipulated strong and weak high tech company image to establish alliance image by providing each respondent with a scenario to read followed by a survey to complete. Structural equation modeling will be utilized as the method for analysis. The LISREL 8 (Joreskog and Sorbom 1996) software package was used to conduct the structural equation modeling.

Dependent Variable

A five-item, seven point semantic scale (Table 6) was used to measure likelihood of adoption, developed by Dodds, Monroe, and Grewal (1991). This scale is similar to other one-item and two-item instruments used to measure the likelihood of adoption of new products with self-report Likert scales (Festervand, Meinert, and Vitell 1994; Areni, Duhan, and Kieker 1999; Lin 1999). The leading question was modified to test adoption of a product from the alliance rather than a specific brand. The five-item scale should provide a measure that permits the calculation of coefficient alpha.

Table 6

Likelihood of Adoption Scale

Based only on the information given, please circle the appropriate response that best describes the likelihood that would purchase a product from the organization described?

Unlikely	1	2	3	4	5	6	7	Likely
Nonexistent	1	2	3	4	5	6	7	Existent
Improbable	1	2	3	4	5	6	7	Probable
Impossible	1	2	3	4	5	6	7	Possible
Uncertain	1	2	3	4	5	6	7	Certain

Independent Variables

Risk Taking

An existing scale was used for risk-taking. The nine-item Risk Taking scale was used successfully by Raju (1980). It is a seven-point Likert-type scale measuring the degree to which a person is willing or eager to take a risk by trying unfamiliar restaurants, products, and brands (Table 7). The scale is anchored by "strongly disagree" = 1 and "strongly agree" = 7. Raju (1980) reported the scale to have reliability of .808 and .831 for two samples.

Table 7

Risk Taking

1.	When I eat out, I like to try the most unusual items the restaurant serves even if I am not sure I would like them.
2.	I am the kind of person who would try any new product once.
3.	When I go to a restaurant, I feel it is safer to order dishes I am familiar with.
4.	I am cautious in trying new/different products.
5.	Even for an important date or dinner, I wouldn't be wary of trying a new or unfamiliar restaurant.
6.	I would rather stick with a brand I usually buy than try something I am not very sure of.
7.	I never buy something I don't know about at the risk of making a mistake.
8.	If I buy appliances, I will buy only well established brands.
9.	I enjoy taking chances in buying unfamiliar brands just to get some variety in my purchases.

Expertise

The most common way subjective knowledge has been measured is with a single, self-report item (Flynn and Goldsmith 1999, p. 58). Mitchell and Dacin (1996) tested several one-item, self-report measures of knowledge simultaneously. Similarly, each measure produced reliable and valid results. However, for this study, a better measure of expertise should result from a modified, two-item, self-report measure (Table 8) used by Raghubir and Corfman (1999). The format was modified to a seven-point Likert-type scale for consistency with the other measures in this study. A two-item measure should provide a higher coefficient alpha. In addition, the scale was modified from the original use to reflect the "electronic" product category examined in the study. Two knowledge-based questions will be asked. A seven-point scale will be used for responses, anchored at 1 = "Not at all" and 7 = "Very".

Table 8

Expertise Scale

1.	How knowledgeable are you about electronics products?
2.	How interested are you in electronics products?

Consumer Innovativeness

For consumer innovativeness, previously tested scales by Goldsmith, Freiden, and Eastman (1995) were used. The self-report, five-point, agree-disagree format was

modified to a seven-point Likert-type scale for consistency with the other measures in this study. The Goldsmith, Freiden, and Eastman (1995) general consumer innovativeness scale (Table 9) reported a coefficient alpha of .85, and the coefficient alpha for product category specific innovativeness (Table 10) was .81.

Table 9

General Innovativeness

1.	I am reluctant about adopting new ways of doing things until I see them working for people around me.
2.	I rarely trust new ideas until I can see whether the vast majority of people around me accept them.
3.	I am aware that I am one of the last people in my group to accept something new.
4.	I must see other people using new innovations before I will consider them.
5.	I am generally cautious about accepting new ideas.
6.	I tend to feel the old way of living and doing things is the best way.

Table 10

Product Category Specific (Electronic) Innovativeness

1.	In general, I am the last in my circle of friends to know the latest new electronic entertainment equipment.
2.	Compared to my friends, I own very little electronic entertainment equipment.
3.	In general, I am among the last in my circle of friends to buy new electronic equipment when it appears.
4.	I know the names of new electronic entertainment equipment before other people do.
5.	If I heard that new electronic equipment was available in the store, I would be interested enough to buy it.
6.	I will buy a new item of electronic entertainment equipment even if I had little experience with it.

High-Tech Company Image Scale Development

To adequately test the model in this study, it was necessary to select a product category to which a broad cross-section of consumers could relate. Consumer electronic goods were selected since most people own televisions, VCR's, stereos, etc. New products are relatively common in the high tech product category.

A critical element in the evolution of a fundamental body of knowledge in marketing, as well as for improved marketing practice, is the development of better measures of the variables with which marketers work (Churchill 1979). The adequate

measurement of abstract constructs is perhaps the greatest challenge to understanding the behavior of people (Hinkin 1998). After a careful literature review, it was determined that previous company image scales could not and would not accurately measure the intended high tech company image construct necessary for this particular study. Since a good scale to measure high-tech company image does not exist in the literature, it was necessary to develop a scale to measure high tech company image. This scale development process includes elicitations, pre-tests, and two studies.

Domain Specification

According to Churchill (1979), the first step in the suggested procedure for developing better measures involves specifying the domain of the construct. Therefore, it is important to indicate what is included in the definition and what is not. Of course, a vital component of research is consulting existing literature when conceptualizing constructs and specifying domains (Churchill 1979; Hinkin 1998). A conceptualization of high tech company image must be specified in order to create a scale that accurately measures it.

Company image refers to the general impression of a particular company held by some segment of the public (Johnson and Zinkhan 1990, p346). It is a composite mental portrait held by a specific group of consumers concerning an organization (Hardy 1970). Thus, it is the result of how consumers perceive the company overall (Gronroos 1984, p39). For this study, company image is viewed as a consumer's overall evaluation of an organization. This definition, emphasizing a general evaluation by a certain group, is broad enough to encompass an individual's feelings and knowledge about a company.

Yet, the definition is narrow enough to yield a parsimonious depiction of company image as a construct, by excluding related concepts. Consumers should base their opinions of company image primarily on the company's products and services (Johnson and Zinkhan 1990).

In essence, it is important to distinguish company image from constructs like brand image, company reputation as an employer, and attitude toward the company. For this study, the specific concern rests with how consumers, not other constituents, perceive the company. Furthermore, the specific concern is with high-technology electronics companies. Therefore, the measures are concerned with individual consumers as the target market and companies in the consumer electronics industry. This study asserts that high-tech company image is viewed as a consumer's overall evaluation of a high tech company/organization.

Item Generation

The second step in scale development is generating items that capture the domain as specified (Churchill 1979). The item generation procedure involved three steps. First, Tucker's (1961) company image scale was pre-tested. Scale items for company image were produced by conducting a literature search and by conducting interviews with consumers and sales representatives in electronics. Pretests were performed for company image to establish reliability and validity of the measures used in this study. Also, pretests were conducted to refine the analytical tools and optimize operationalization of the research methods utilized in this study. Pretesting a small subsample helps determine

whether the data-gathering plan for the main study is an appropriate procedure (Zikmund 1986).

Second, an elicitation was conducted to ascertain consumer views of terms used to describe strong and weak high tech company image. Three groups of eight undergraduate students from a major mid-western university participated in an exploratory survey conducted simultaneously as part of a marketing class assignment. The groups, half-male and half-female, consisted of upper-classmen with a median age of twenty-one. Each exploratory group session lasted ten to fifteen minutes. The participants were asked to record on a piece of paper their view of a "strong high tech company", using one word or a short phrase (i.e. "Please describe a term or short phrase you would use to describe a strong high tech company."). Likewise, the group was asked to record their idea of a "weak high tech company", using one word or a short phrase (i.e. "Please describe a term or short phrase you would use to describe a weak high tech company."). There were twenty-one total terms for a general "strong high tech company", and nineteen total terms for a general "weak high tech company". The most popular terms associated with strong high tech companies were "big", "large", "powerful", "favorable", "stable", and "good". The most common terms associated with weak high tech companies were "small", "new," "passive", and "bad". The resulting strong and weak terms were compared to existing company image scales.

Third, following the elicitation of strong and weak terminology from the exploratory groups and existing scales, a pretest was conducted to ascertain the best bipolar terms to describe a "strong-weak" high tech company relationship. The oldest and most useful method for measuring company image is the semantic differential technique

(Mindak 1961; Clevenger, Lazier, and Clark 1965; Hardy 1970). The semantic differential technique sets up a continuum between a series of bipolar adjectives. After the exploratory groups, dichotomies were created from each term and compared to existing scales (Osgood, Suci, and Tannenbaum 1965). Following the elicitation of terms, Tucker's (1961) eleven-item company image scale was retested (Table 11). Twenty-four marketing students were surveyed. The respondents were asked to "Please rate the following combinations of terms on how much you think they indicate a weak high tech company - strong high tech company relationship." The results were analyzed for validity and reliability, to ensure internal consistency and repeatability (Table 12).

Table 11

Tucker's (1961) Company Image Scale

1) fair-unfair	Disagree 1 2 3 4 5 6 7 Agree
2) rich-poor	Disagree 1 2 3 4 5 6 7 Agree
3) old-young	Disagree 1 2 3 4 5 6 7 Agree
4) friendly-distant	Disagree 1 2 3 4 5 6 7 Agree
5) powerful-weak	Disagree 1 2 3 4 5 6 7 Agree
6) informal-formal	Disagree 1 2 3 4 5 6 7 Agree
7) easy to deal with-hard to deal with	Disagree 1 2 3 4 5 6 7 Agree
8) calm-nervous	Disagree 1 2 3 4 5 6 7 Agree
9) interested in the community-interested in profits only	Disagree 1 2 3 4 5 6 7 Agree
10) careful-careless	Disagree 1 2 3 4 5 6 7 Agree
11) progressive-set in their ways	Disagree 1 2 3 4 5 6 7 Agree

Measure Purification

The third step in scale development necessitates purifying the measure (Churchill 1979). Accordingly, items should be tested for internal consistency. Coefficient alpha is the recommended measure for internal consistency (Churchill 1979). Consistent with Churchill's (1979) procedure, a reliability analysis was performed and produced a .4602 coefficient alpha. This low coefficient alpha indicates that the items used perform poorly in capturing high tech company image. Nunnally (1978) suggests an alpha of at least .50 to .60, for early stages of basic research. This result prompted an iteration of the scale. Upon careful examination of the results for content validity, an additional seven terms gathered from elicitations were added to the scale to better assess the high technological orientation of present companies (Table 12).

Once again, twenty-three marketing students as respondents were asked to "Please rate the following combinations of terms on how much you think they indicate a weak high tech company - strong high tech company relationship." The scale was re-tested with the new items. The new eighteen-item scale produced a coefficient alpha of .8102. To validate the new eighteen-item high tech company image scale, the scale was tested against actual companies perceived as having strong, moderate, and weak company images. Eight actual company names were pretested for consumer perception. Sixteen people were randomly selected to rank-order eight companies (Table 13). Also, sixteen additional respondents were randomly selected to rate the same companies on a scale of 1-7, from very weak to very strong (Table 14).

Table 12

Potential High Tech Company Image (18-item) Scale

1) conservative-progressive	Disagree 1 2 3 4 5 6 7 Agree
2) conventional-extraordinary	Disagree 1 2 3 4 5 6 7 Agree
3) traditional-innovative	Disagree 1 2 3 4 5 6 7 Agree
4) laggard-leader	Disagree 1 2 3 4 5 6 7 Agree
5) follower-pioneer	Disagree 1 2 3 4 5 6 7 Agree
6) shoddy-meticulous	Disagree 1 2 3 4 5 6 7 Agree
7) inferior-superior	Disagree 1 2 3 4 5 6 7 Agree
8) unfair-fair	Disagree 1 2 3 4 5 6 7 Agree
9) poor-rich	Disagree 1 2 3 4 5 6 7 Agree
10) young-old	Disagree 1 2 3 4 5 6 7 Agree
11) distant-friendly	Disagree 1 2 3 4 5 6 7 Agree
12) weak-powerful	Disagree 1 2 3 4 5 6 7 Agree
13) formal-informal	Disagree 1 2 3 4 5 6 7 Agree
14) hard to deal with-easy to deal with	Disagree 1 2 3 4 5 6 7 Agree
15) nervous-calm	Disagree 1 2 3 4 5 6 7 Agree
16) interested in profits only-interested in the community	Disagree 1 2 3 4 5 6 7 Agree
17) careless-careful	Disagree 1 2 3 4 5 6 7 Agree
18) set in their ways-progressive	Disagree 1 2 3 4 5 6 7 Agree

Table 13

Rank-order

Please rank order the following nine companies from strongest to weakest. With 1 being strongest.

_____Intel

_____Exactech

_____GE (General Electric)

_____Daewoo

_____AOL

_____Pericom Semiconductor

_____Microsoft

_____Phillips

Table 14

Rate companies

Please rate the following ten companies from weak to strong by circling the number on the seven point scale with 1 being very weak to 7 being very strong.

	Very weak						Very strong
_____Intel	1	2	3	4	5	6	7
_____Exactech	1	2	3	4	5	6	7
_____GE (General Electric)	1	2	3	4	5	6	7
_____Daewoo	1	2	3	4	5	6	7
_____AOL	1	2	3	4	5	6	7
_____Pericom Semiconductor	1	2	3	4	5	6	7
_____Boxtech	1	2	3	4	5	6	7
_____Neutech	1	2	3	4	5	6	7
_____Microsoft	1	2	3	4	5	6	7
_____Phillips	1	2	3	4	5	6	7

Microsoft was consistently ranked the highest (1 = highest, 8 = lowest). Philips Electronics and Daewoo Electronics, respectively, were consistently ranked moderately and lowest. Microsoft had a score of 1.5, the score closest to 1. Philips scored 4.4375, while Daewoo scored 6.8125. Rating the companies , from one to seven, on the semantic differential scale validated this pretest (1 = very weak, 7 = very strong). Microsoft had the highest means, with 6.625. Philips was in the middle, with 4.625. Daewoo had the lowest mean, with 2.5625.

The three real companies were then evaluated with the eighteen-item company image scale. Respondents were instructed to rate each of the companies on the eighteen-item scale. The same instructions were placed at the top of each page, followed by a company name and the scale (Table 15). There were one hundred and six respondents, who participated in the survey. The respondents were enrolled in an upper-level marketing class at a major mid-western university. The respondents were awarded extra credit for their participation in the survey.

Each respondent rated the three companies. The companies were arranged in different orders to alleviate order bias. Hence, the three companies had equal placements as the first, second, and third page. Results indicated that order placement was not an issue. Exploratory factor analysis was used to assess the dimensionality and purify the measure through item deletion (Churchill 1979). An exploratory factor analysis was conducted for Microsoft using principal component analysis with varimax rotation.

Table 15

Company-specific Image Scale

Please rate the following high-tech company on each of the following characteristics below by circling the number that most closely represents your perception. There are no right or wrong answers. Your participation is strictly voluntary and confidential. Thank you.

Microsoft (Philips or Daewoo)

1) conservative	1	2	3	4	5	6	7	progressive
2) conventional	1	2	3	4	5	6	7	extraordinary
3) traditional	1	2	3	4	5	6	7	innovative
4) laggard	1	2	3	4	5	6	7	leader
5) follower	1	2	3	4	5	6	7	pioneer
6) shoddy	1	2	3	4	5	6	7	meticulous
7) inferior	1	2	3	4	5	6	7	superior
8) unfair	1	2	3	4	5	6	7	fair
9) poor	1	2	3	4	5	6	7	rich
10) young	1	2	3	4	5	6	7	old
11) distant	1	2	3	4	5	6	7	friendly
12) weak	1	2	3	4	5	6	7	powerful
13) formal	1	2	3	4	5	6	7	informal
14) hard to deal with	1	2	3	4	5	6	7	easy to deal with
15) nervous	1	2	3	4	5	6	7	calm
16) interested in profits only	1	2	3	4	5	6	7	interested in the community
17) careless	1	2	3	4	5	6	7	careful
18) set in their ways	1	2	3	4	5	6	7	progressive

As a result of the factor analysis, five factors were produced. Four items within the five factors were removed due to high cross-loadings ("formal-informal", "poor-rich", "young-old", and "unfair-fair"), following an examination for face validity and reliability. The remaining fourteen items were factor analyzed and produced three components. The factors account for 63.053 percent of the variance, 36.736, 15.439, and 10.878, respectively. The three-factor structure produced eigenvalues of 5.143, 2.161, and 1.523. Also, the three factors provided alphas of .8357, .7647, and .8405. Three items were deleted due to split loadings ("interested in profits only-interested in the community", "nervous-calm", and "careless-careful"), loading .40 or more on more than one factor (Churchill 1979). In addition, two of the three factors did not pass a face validity test, containing six items ("weak-powerful", "hard to deal with-easy to deal with", "shoddy-meticulous", "distant-friendly", "inferior-superior", and "set in their ways-progressive"). Although they fit together statistically, they did not fit logically. The excluded factors contained several items, resulting from an initial conception of company image based on human characteristics. The removed items lacked the dimensionality desired for high – tech company image. In total, thirteen items were dropped that didn't seem representative of high-tech company image, and the remaining items were checked for reliability.

Reliability Assessment

The fourth step in scale development is assessing reliability (Churchill 1979), and the basic statistic for the determination of a measure based on internal consistency is coefficient alpha. The resulting five-item company image scale generated a coefficient

alpha of .8580. Each remaining item was examined to ensure that it had a certain amount of distinctiveness and specificity (Churchill 1979). The findings for the five-item scale were replicated with Philips and Daewoo, yielding coefficient alphas of .8556 and .8364.

Finally, the data from the three companies were merged and factor analyzed. As a result, one factor emerged. Then, a two-factor solution was forced to verify a single factor solution. Item-total statistics were examined for "alpha if item deleted", and two items were removed to substantially improve coefficient alpha ("laggard-leader", and "follower-pioneer").

After further scale purification for content validity, a coefficient alpha of .8802 resulted for the three items remaining. This is considered an excellent alpha, since increasing it much higher than .80 would be wasteful (Nunnally 1978). The three-item scale is shown in Table 16. The item – total correlations for the high-tech company image scale are: "Conservative-Progressive" - .7628, "Conventional-Extraordinary" - .7723, "Traditional-Innovative" - .7747.

Table 16

Hi-Tech Company Image Scale items

1.	Conservative-Progressive
2.	Conventional-Extraordinary
3.	Traditional-Innovative

Construct Validity Assessment

The fifth step in scale development is assessing construct validity (Churchill 1979). The newly created high-tech company image scale was further tested for construct validity. Internal consistency is a necessary, not sufficient, condition for construct validity (Churchill 1979). An elicitation was conducted to acquire actual company names for validation of the scales. Thirty-eight marketing students were asked to list five companies from the high-tech industry or electronics industry that matched "strong" and "weak" descriptions. The items from the newly developed high-tech company image scale were used as a basis to define a strong and weak high-tech company. A strong high-tech company was described as a company that is progressive, extraordinary, and innovative. A weak high-tech company was described as a company that is conservative, conventional, and traditional.

The effort yielded forty-nine strong companies, and seventy weak companies. Microsoft, Sony, and Dell were the leaders in the strong categories, with twenty-seven twenty-two, and twenty-one reports, respectively. IBM, JVC, and GE were noted most often as weak high-tech companies, with fourteen, ten, and eight reports, respectively. Apple was indicated eight times as a strong company, and seven times as a weak company. The preceding seven companies were selected for further testing in the next section as companies having strong, weak, and moderate company images.

In this pretest, the new scale was tested for discriminant validity to evaluate if there was a difference between "attitude" and "image".. The scale was tested against Boulding and Kirmani's (1993) six-item "attitude toward the company" scale (Table 17), which reported a Cronbach's alpha of .85, originally. The survey was conducted with

fifty-one undergraduate marketing students as respondents. Each respondent rated six of the real companies using the new image scale and the attitude toward the company scale. The companies were scrambled in the surveys to alleviate order bias. Examination of the results indicated that order was not an issue.

Table 17

Attitude toward the company (Boulding and Kirmani 1993)

1.	unreputable-reputable
2.	financially unstable-financially stable
3.	untrustworthy-trustworthy
4.	fly-by-night—established
5.	short-run oriented--long-run oriented
6.	Likelihood that this business will exist seven years from now: very unlikely-very likely

An exploratory factor analysis was run and two factors resulted (Table 18). The two factors were representative of the two different scales. However, items that load clearly in an exploratory factor analysis may demonstrate a lack of fit in a multiple-indicator measurement model due to lack of generalizabilty (Gerbing and Anderson 1988). Both scales were tested for reliability. The attitude toward the company scale (Boulding and Kirmani 1993) was consistent with the original findings, with a coefficient alpha of .8551. The high-tech company image scale had an alpha of .8454. To further

examine the performance of the three-item high-tech company image scale, a confirmatory factor analysis was run using LISREL 8 (Joreskog and Sorbom 1996).

LISREL allowed the assessment of the quality of the factor structure by statistically testing the significance of the overall model and of item loadings on factors (Hinkin 1998). This technique permitted a stricter interpretation of undimensionality. The confirmatory factor analysis is a quantitative analysis of the quality of the factor structure providing further evidence of the construct validity of the new measure (Hinkin 1998). It confirmed that the prior analysis was conducted appropriately.

In the confirmatory factor analysis, two models were compared. In Model 1, all of the items were loaded on one construct. Model 2 consisted of the items loaded on two different latent variables, "attitude toward the company" and "high-tech company image". For Model 1, the resulting chi-square was 437.87, with twenty-seven degrees of freedom and p-value < .0001, and RMSEA = .223. Model 1 Goodness of Fit indices were GFI = 0.76, AGFI = 0.60, and NFI = 0.70. The estimated non-centrality parameter (NCP) was 410.87. For Model 2, the chi-square was 92.83 and df = 26, with p-value < .0001 and RMSEA = .092. Model 2 goodness of fit indices were GFI = 0.94, AGFI = 0.89, and NFI = 0.93. The estimated non-centrality parameter (NCP) for Model 2 was 66.83, moving closer to zero which is desirable.

Table 18

Discriminant Validity

Exploratory Factor Loadings and Alpha Coefficients for Scale Items

Scale	Item	Component		Alpha
Attitude Toward Company				.8551
		1	2	
	very unlikely-very likely	.747	.302	
	short run oriented--long-run oriented	.816	4.196E-02	
	fly-by-night--established	.819	8.037E-02	
	untrustworthy-trustworthy	.700	.118	
	financially unstable-financially stable	.769	.252	
	unreputable-reputable	.596	.271	
Company Image				.8454
	traditional-innovative	.204	.844	
	conventional-extraordinary	.176	.874	
	conservative-progressive	.143	.843	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 3 iterations.

Clearly, the fit indices indicate that Model 2 is superior to Model 1. In addition, the substantial drop in chi-square suggests that Model 2 is better. It is desirable to have a significantly smaller chi-square for the specified model than for competing models. Also, the smaller the chi-square the better the fit of the model (Hinkin 1998). All comparisons showed evidence that the two-construct model of image and attitude were better than a single construct. Furthermore, the appropriate scale items loaded on their respective constructs (Table 19). A chi-square difference test was performed, $\chi^2_{\Delta} = 345.04$ $df_{\Delta} = 1$, and $p < .0001$. This is highly significant, providing evidence of discriminant validity (Bollen 1989).

Table 19

Confirmatory Factor Loadings for Attitude and Image Scale Items

	Image	Attitude
Scale Items		
traditional-innovative	0.80	
conventional-extraordinary	0.85	
conservative-progressive	0.76	
unreputable-reputable		0.56
financially unstable-financially stable		0.76
untrustworthy-trustworthy		0.61
fly-by-night--established		0.77
short run oriented--long-run oriented		0.74
very unlikely-very likely		0.79
Scale Statistics		
Reliability	0.8457	0.8576
Average Variance Explained	0.6467	0.5048

Fictitious Company and Company Image Scale Pretest

A pretest was conducted to determine a neutral fictitious company name to pair with company scenarios. Interviews with various professionals and doctoral students created twelve names for further testing. Twenty-four marketing students were surveyed. The respondents were asked to rate the companies from weak to strong, on a scale of 1-7. The scores ranged from 2.5263 to 6.0526, with a mean of 3.7544. The generic names selected from the list for the main study were Boxtech and Neutech, with means of 3.9474 and 4.2632, respectively. Both of these names were in the middle of the distribution of names and closest to the mean. Boxtech and Neutech yielded significant t-tests of 10.889 and 13.198, at $p < .001$.

The new three-item company image scale was tested with scenarios using fictitious company names and profiles. The fictitious company profiles consisted of company history, a company analysis, and a company rating. Companies with strong and weak images were described using the neutral fictitious names (Table 20). After reading the company information, the respondents were asked to rate the company on the image scale. Fifty-two respondents participated in the study. Twenty-six respondents read a scenario with Boxtech, and twenty-six respondents read a scenario with Neutech. Both company names were used equally as strong and weak companies. There was a clear difference between the strong and weak company description. The strong company description produced a mean of 5.8462, while the mean for the weak company was 2.9744. A reliability analysis produced a coefficient alpha of .9512.

Table 20

Strong company profile

COMPANY PROFILE: Boxtech (Neutech)
Boston, Mass.

COMPANY HISTORY

Neutech was formed in 1970 in Albany, New York, by engineers John and Paul Roberts to create, manufacture, and distribute consumer audio and video equipment. The company produced a variety of radios and televisions. During the 1980's, the company began expanding its product offerings, by providing audio and video support equipment. In 1996, the company shifted a major focus towards providing DVD technology. As of 1998, approximately 60% of the company's revenue came from the DVD players it produced. Most of the company's products are sold through retailers to the consumers.

COMPANY ANALYSIS

Neutech is considered by many experts to be an industry leader in technological innovations. The company has earned over 100 patents in recent years, while the industry average was 50 patents. The company continually strives to remain on the cutting edge of technology. Management and employees are well trained and knowledgeable. Neutech is revered by its competition for its organization and professionalism. The company's stock value continues to rise at or above the industry average.

COMPANY RATING: B

Table 20 *Continued*

Weak company profile

COMPANY PROFILE: Neutech (Boxtech)
Boston, Mass.

COMPANY HISTORY

Neutech was formed in 1971 in Albany, New York, by engineers John and Paul Roberts to create, manufacture, and distribute consumer audio and video equipment. The company produced a variety of radios and televisions. During the 1980's, the company began expanding its product offerings, by providing audio and video support equipment. In 1997, the company shifted a major focus towards providing DVD technology. As of 1998, approximately 63% of the company's revenue came from the DVD players it produced. Most of the company's products are sold through retailers to the consumers.

COMPANY ANALYSIS

Neutech is considered by many experts to be an industry laggard in technological innovations. The company has earned 25 patents in recent years, while the industry average was 50 patents. The company tends to be a follower bringing technology to market. Management and employees are considered average by industry standard. Neutech is not considered a threat by its competition. The company's stock value under-performs the market.

COMPANY RATING: D

The study design incorporated a 2 (Strong/Weak High-Tech Company Image) x 2 (Strong/Weak High-Tech Company Image) factorial design. Respondents, from an airport intercept, received instructions and were asked to read fictitious scenarios describing two companies and their formation of an alliance. The scenarios described a company with a strong image forming an alliance either with a weak-image company or a strong-image company. Also, descriptions explained a company with a weak image initiating an alliance with a strong image company or another weak image company.

After reading one of the alliance scenarios, the respondents were asked to complete the attached survey (Appendix A) that includes measures for the dependent variable, likelihood of new product adoption. Included in the survey were measures for the independent variables, alliance image, product category-specific consumer innovativeness, risk taking, general consumer innovativeness, and expertise. Also, the respondents were asked which company they thought was the lead company in the alliance.

The questionnaire, also, requested demographic information. First of all, the respondents were requested to report their gender. Secondly, five ethnic groups (Asian, Black, Hispanic, Native-American, and White) were listed followed by a category listed as "other". Thirdly, age was categorized into six ranges: 18 to 25, 26 to 35, 36 to 45, 46 to 55, 56 to 65, and >65. Next, education was categorized into eight groups ranging from "less than high school" to "professional degree". Household income was measured by a nine-category scale. Finally, the respondents were asked to report their job type using twelve categories (including, "other").

Structural equation modeling, utilizing the LISREL 8 application (Joreskog and Sorbom 1996), was used as the statistical technique. Structural equation modeling is a technique combining elements of both multiple regression and factor analysis. It enables the researcher not only to assess quite complex interrelated dependence relationships but also to incorporate the effects of measurement error on the structural coefficients at the same time (Hair et. al. 1995, p. 670). Subjects were selected and randomly assigned to one of four treatment conditions. The high-tech company image was used as a manipulation check to see if respondents matched the experimental condition.

CHAPTER 4

RESEARCH FINDINGS

This chapter presents the hypothesis testing and research findings. A technique equivalent to a mall intercept was utilized. The sample location was an international airport in the southwestern United States. There were 673 respondents involved in the survey. There was a sixty-six percent response rate. Missing item data were replaced with the mean value of a respondent's response for the particular construct. The mean substitution data saving technique resulting in retaining all collected surveys. Among the respondents who recorded demographic information (Table 21), fifty-three percent were female, and forty-seven percent were male, with 97.4 percent of the sample reporting gender. Ethnicity information produced a 95.6 percent response rate. Among those reporting racial background, sixty-seven percent were Caucasian, nine percent Asian, eight percent African-American, six percent Native-American, two percent Hispanic, and two percent other races. Forty-nine percent of those surveyed were between the ages of eighteen and twenty-five years old, with twenty-four percent between the ages of twenty-six and thirty-five, based on 97.2 percent of the respondents reporting. The mean household income, with 94.4 percent reporting, was forty thousand dollars. Fifty-one percent of the respondents had "some college", twenty percent were college graduates, and ten percent were "high school graduates only", while 97.1 percent reported educational level.

Table 21

Demographics

GENDER

	Percent (reported)
male	45.16129
female	51.75953

Household Income

	Frequency	Percent
1	192	28.15249
2	107	15.68915
3	110	16.12903
4	81	11.87683
5	45	6.59824
6	34	4.985337
7	23	3.372434
8	17	2.492669
9	32	4.692082
10	3	0.439883

AGE

	Frequency	Percent
1	331	48.53372
2	156	22.8739
3	75	10.99707
4	59	8.651026
5	34	4.985337
6	8	1.173021

education

	Frequency	Percent
1	16.000	2.346
2	66.000	9.677
3	23.000	3.372
4	348.000	51.026
5	133.000	19.501
6	45.000	6.598
7	23.000	3.372
8	8.000	1.173

ethnicity

	Frequency	Percent
1	63.000	9.238
2	60.000	8.798
3	16.000	2.346
4	43.000	6.305
5	460.000	67.449
6	10.000	1.466

The surveys were conducted and collected with the assistance of an undergraduate marketing class as part of a class assignment on marketing research. The data collection effort was offered as bonus points for the project. An alternative assignment that was less challenging was offered for students not wanting to participate in the data collection. The students were separated into four groups, evenly balanced with males and females. There were six members in each group. All group members were simultaneously briefed on administering the surveys. They were instructed to request respondents to participate in a "year 2000 product opinion survey" for a local major university.

In addition, the assistants were advised to instruct respondents to refer to the cover page of the survey for instructions and information about the survey. The instructions were consistent for all surveys (Appendix A). As an incentive to participate in the survey, respondents who completed the survey were entered into a drawing for a new DVD player. After completing the survey, respondents filled out a ticket containing contact information that was separate from the survey. Respondents were informed that the contact information was for the DVD drawing only, and there was no way to connect the personal information with the surveys.

Data were gathered over a three-week period at various times throughout the day, Monday through Saturday, during the summer at the airport terminals and baggage claim areas. Each of the four groups was unknowingly assigned a condition. The conditions consisted of four different scenarios. The scenarios described two different companies forming an alliance. The description consisted of a company with a strong or weak high-tech company image partnering with another company with a strong or weak high-tech

company image. As a result, the four alliances contained two strong high-tech company images, a strong high-tech company image allying with a weak high-tech company image, two weak high-tech company images, and a weak high-tech company pairing with a strong high-tech company.

The four sample sizes were 236, 120, 197, and 120, respectively. It is speculated that the unequal data collection resulted from uneven distribution of the surveys. Unfortunate circumstances at the collection site prohibited a continuation of the data collection to balance out the sample groups.

Reliability Assessment

Using SPSS statistical package, the dependent and independent measures were analyzed for reliability (Table 22). The adoption scale produced an excellent coefficient alpha of .9271. The new high-tech company image scale produced a coefficient alpha of .8802. The global consumer innovativeness (GCI) scale provided a reliability of .8756. The coefficient alphas for expertise and product category-specific consumer innovativeness (Electronic Innovativeness - EI) were .8502 and .8202, respectively.

Table 22

Reliabilities

Scale	alpha
Adoption	.9271
Image	.8802
GCI	.8756
EI	.8202
Risk Taking	.7595

A close examination of item descriptives for item to total correlations and "alpha if item deleted" indicated an improvement in reliability by dropping five items in the risk taking measure (Table 23). Items with a value less than .5 item-total correlation were dropped. The items were deleted sequentially, starting with the lowest item-total correlation. The resulting four-item scale produced a reliability .7595.

Table 23

Risk Taking

Scale	Scale Mean if Item Deleted	Corrected Variance if Item Deleted	Item-Total Correlation	Squared Multiple Correlation	Alpha if Item Deleted
RT1	31.1947	50.2760	.4871	.3658	.6754
RT2	30.0550	55.1473	.3236	.1713	.7078
RT3	31.0743	50.9647	.5493	.4493	.6652
RT4	30.3804	53.2509	.4944	.3417	.6775
RT5	30.5097	59.9437	.1391	.0614	.7397
RT6	30.7682	52.3093	.5076	.3600	.6740
RT7	30.3120	53.4918	.4433	.3682	.6855
RT8	31.5587	55.5832	.3367	.2209	.7046
RT9	31.3536	57.2676	.2915	.1680	.7117

Reliability Coefficients 9 items

Alpha = .7191 Standardized item alpha = .7209

An exploratory factor analysis was conducted to validate the constructs (Table 24). The principal components extraction of six factors was applied using varimax rotation. Most of the appropriate items loaded on separate constructs.

Table 24

Exploratory Factor Analysis

Rotated Component Matrix

	Component					
	1	2	3	4	5	6
AD1	.036	.862	.105	.032	.129	.076
AD2	.079	.880	.046	.023	.105	.101
AD3	.034	.913	.092	.056	.055	.062
AD4	.080	.875	.053	.054	.110	.070
AD5	-.006	.802	.029	.110	.068	.041
EI1*	.284	.100	.658	.065	.187	.318
EI2	.150	.091	.837	-.019	.167	.145
EI3	.120	.105	.850	.061	.160	.126
EI4	.060	.048	.234	.027	.630	.404
EI5	.079	.197	.194	.023	.812	.170
EI6	.095	.189	.113	.115	.837	.055
EX1	.194	.136	.195	.024	.220	.852
EX2	.119	.187	.283	.047	.203	.801
GI1	.769	.083	-.027	.198	.168	.092
GI2	.803	-.015	.028	.264	.050	.118
GI3	.762	.011	.161	.118	.001	.190
GI4	.793	.061	.187	.168	.078	.008
GI5	.767	.050	.101	.232	.056	.007
GI6	.547	.061	.252	.236	-.056	.044
RT3	.225	.067	.042	.739	.138	-.004
RT4	.452	.048	.009	.570	.177	.033
RT6	.254	.105	.005	.752	-.034	.110
RT7	.333	.050	.050	.671	-.032	-.043

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization

*EI (Electronic Innovativeness) = Product Category-Specific Consumer Innovativeness

Factor loadings greater than .30 are considered the minimum criterion (Hair et. al.1995). Loadings greater than .40 are considered more important, while loadings greater than .50 are considered significant. The product category-specific consumer innovativeness suggested two dimensions. Therefore, it was important to proceed with extra caution and carefully examining that construct's items. Three of the product category-specific consumer innovativeness items loaded on the expertise dimension in the EFA. This suggests a knowledge dimension of product category-specific consumer innovativeness. To maximize explanatory capability and rely on previous theoretical support (Goldsmith and Hofacker 1991; Goldsmith, Freiden, and Eastman 1995; Mowen, Christia, and Spears 1998), the scale was left intact.

Structural Equation Modeling

The hypotheses were tested using LISREL 8 (Joreskog and Sorebom 1996) structural equation modeling. Some researchers insist that LISREL is "the most important and influential statistical revolution to have occurred in the social sciences" (Cliff 1983, p. 115). The term "structural" stands for the assumption that the parameters are not just descriptive measures of association but rather that they reveal an invariant "causal" relation (Bollen 1989, p. 4). The advantage of structural equation modeling is that it is a statistical technique that examines a series of multiple interrelated dependence relationships simultaneously, with the ability to represent unobserved concepts in these relationships and account for the measurement error in the estimation process (Hair, et. al. 1995, p. 622). In effect, this comprehensive means of assessing and modifying

theoretical models offer great potential for furthering theory development (Anderson and Gerbing 1988).

A two-stage analysis was applied with the use of LISREL 8 (Joreskog and Sorebom 1996). In this process, the measurement model is estimated first, and then the measurement model is "fixed" in the second stage when the structural model is estimated (Anderson and Gerbing 1988). In this approach, the potential for interpretational confounding is minimized by prior estimation of the measurement model because no constraints are placed on the structural parameters that relate the estimated constructs to one another. With a one-step approach, the presence of interpretational confounding cannot be detected, resulting in fit being maximized at the expense of meaningful interpretability of the constructs (Anderson and Gerbing 1988). The measurement model is concerned with the relationship of the observed variables, the individual questionnaire items, to the latent variables, likelihood of new product adoption, product category-specific consumer innovativeness, general consumer innovativeness, risk taking, and expertise.

The structural model is concerned with the relationship between the latent variables. The contribution of this technique is that accurate representation of the reliability of the indicators is achieved optimally in a two step process (Hair, et. al. 1995). This approach avoids the interaction of measurement and structural models. When dealing with theory building, the staged process maximizes the interpretability of the measurement and structural models (Hair et. al. 1995).

One of the most important concepts in research is that there is no single "correct" way to apply a multivariate technique (Hair et. al. 1995). A researcher must formulate the

objectives of the analysis and apply the appropriate technique in the most appropriate manner to achieve the desired objectives (Hair et. al. 1995). This study has established the foundation for six constructs and hypothesized the relationships between them. In this study, the predicted relationships are strictly specified and the remaining objective is a confirmation of those relationships.

Hair et. al. (1995) defines the distinct strategy necessary for supporting this particular study. The most direct application is a confirmatory modeling strategy, which allows the researcher to specify a model and use structural equation modeling to assess its significance (Hair et. al. 1995). For the LISREL model in this study, there are three endogenous constructs, likelihood of new product adoption, product category-specific innovativeness and general consumer innovativeness. Endogenous constructs are predicted by one or more other constructs (Hair et. al. 1995). Exogenous constructs, also known as source or independent variables, are not caused or predicted by any other variable in the model. An exogenous construct can be causally related only to endogenous constructs (Hair et. al. 1995). The exogenous constructs for this study are risk taking and expertise.

Data Input Matrix

Covariances between the individual items that comprised likelihood of new product adoption, product category-specific consumer innovativeness, general consumer innovativeness, risk taking, and expertise served as the input matrix for the linear structural relations (LISREL) analysis (Table 25).

Table 25
Covariance Matrix of Predictor Variables

	RT3	RT4	RT6	RT7	EI1	EI2	EI3	EI4	EI5	EI6	AD1	AD2	AD3	AD4	AD5
RT3(a)	2.64														
RT4	1.22	2.25													
RT6	1.11	1.00	2.47												
RT7	1.01	0.95	1.25	2.53											
EI1(b)	0.42	0.57	0.49	0.42	2.90										
EI2	0.29	0.26	0.20	0.20	1.80	3.37									
EI3	0.37	0.44	0.24	0.29	1.72	2.20	3.15								
EI4	0.36	0.29	0.24	0.09	1.28	1.04	1.07	2.83							
EI5	0.36	0.47	0.19	0.11	0.93	0.98	0.94	1.36	2.37						
EI6	0.49	0.54	0.36	0.33	0.82	0.85	0.77	1.29	1.64	2.70					
AD1(c)	0.30	0.28	0.28	0.18	0.57	0.56	0.57	0.48	0.71	0.73	2.37				
AD2	0.28	0.25	0.31	0.22	0.52	0.46	0.42	0.47	0.63	0.63	1.65	2.12			
AD3	0.31	0.21	0.37	0.18	0.43	0.51	0.52	0.34	0.61	0.57	1.72	1.67	2.14		
AD4	0.35	0.24	0.37	0.27	0.50	0.43	0.48	0.41	0.64	0.68	1.63	1.69	1.71	2.16	
AD5	0.27	0.29	0.35	0.23	0.35	0.27	0.36	0.31	0.50	0.53	1.47	1.32	1.48	1.31	2.11
EX1(d)	0.33	0.43	0.30	0.14	1.22	1.04	0.98	1.23	0.94	0.78	0.56	0.54	0.47	0.51	0.37
EX2	0.27	0.44	0.33	0.18	1.30	1.29	1.19	1.15	1.06	0.94	0.72	0.65	0.62	0.62	0.48
GI1(e)	1.00	1.12	1.01	1.01	0.81	0.57	0.53	0.59	0.48	0.63	0.30	0.39	0.33	0.41	0.25
GI2	0.97	1.07	1.02	1.10	0.80	0.55	0.51	0.39	0.32	0.36	0.08	0.20	0.11	0.21	0.03
GI3	0.71	0.94	0.84	0.92	0.99	0.79	0.75	0.48	0.37	0.37	0.16	0.21	0.19	0.23	0.11
GI4	0.84	1.09	0.91	1.03	1.03	0.85	0.73	0.42	0.46	0.46	0.29	0.32	0.22	0.32	0.21
GI5	1.00	1.28	0.91	0.97	0.87	0.59	0.59	0.29	0.34	0.45	0.32	0.23	0.23	0.27	0.17
GI6	0.84	0.89	0.75	0.73	0.84	0.62	0.73	0.24	0.27	0.36	0.24	0.26	0.28	0.27	0.14

	EX1	EX2	GI1	GI2	GI3	GI4	GI5	GI6
EX1	2.24							
EX2	1.80	2.63						
GI1	0.67	0.54	2.82					
GI2	0.62	0.48	1.80	2.37				
GI3	0.75	0.70	1.48	1.48	2.55			
GI4	0.61	0.52	1.56	1.56	1.50	2.56		
GI5	0.49	0.56	1.46	1.46	1.44	1.67	2.66	
GI6	0.48	0.54	1.02	1.02	1.16	1.12	1.21	2.63

(a) Risk Taking items: RT3, RT4, RT6, RT7
(b) Product Category-Specific Consumer (Electronic) Innovativeness: EI1, EI2, EI3, EI4, EI5, EI6
(c) Adoption: AD1, AD2, AD3 AD4, AD5
(d) Expertise: EX1, EX2
(e) General Consumer Innovativeness: GI1, GI2, GI3, GI4, GI5, GI6

For the measurement model, LISREL calculates lambda estimates which are analogous to factor loadings (Hughes, Price, and Marrs 1986). Higher lambdas indicate that the questionnaire item is more strongly related to the overall construct that is being measured.

Each scale was made scale invariant, by standardizing the indicators (Hair et. al. 1995). One of the loadings in each construct was set to a fixed value of 1.0 (Appendix B). The indicators with fixed loadings are RT7 (Risk Taking), EI6 (Electronic Innovativeness), AD5 (Adoption), EX6 (Expertise), and GI6 (General Innovativeness). Alliance image was evaluated categorically by separating the sample into four groups, based on the scenario evaluated by the respondents. Differences between the groups were then analyzed.

For the structural model, LISREL calculates betas and gammas. Betas and gammas are standardized path coefficients that have included the effects of measurement error. The recommended sample size for structural equation modeling is between one hundred and two hundred observations (Hair et. al. 1995). The sample size should also be large enough compared with the number of estimated parameters but with an absolute minimum of fifty respondents, and a minimum recommended level of five observations for each estimated parameter (Hair et. al. 1995). Considering four cells with a minimum of one hundred observations each, the sample size of 673 collected for this study meets the suggested standards.

Assumptions and Offending Estimates

Structural equation modeling shares three assumptions with other multivariate methods, independent observations, random sampling of respondents, and the linearity of all relationships (Hair et. al. 1995). Since the assumptions have been satisfied at acceptable levels, the next step is to check for offending estimates (Hair et. al. 1995). These are estimated coefficients in either the measurement or structural models that exceed acceptable limits. It is necessary to search for negative error variances, nonsignificant error variances for any construct, standardized coefficients exceeding or very close to 1.0, or very large standard errors associated with any estimated coefficient (Hair et. al. 1995). Offending estimates were not an issue.

Overall Model Fit

After establishing that the data meet the assumptions and that there are no offending estimates, the next step is to assess the overall model fit with one or more goodness-of-fit measures. Goodness-of-fit is a measure of the correspondence of the actual or observed input (covariance or correlation) matrix with that which is predicted from the proposed model (Hair et. al. 1995). The goodness-of-fit measures have three categories: absolute fit measures, incremental measures, and parsimonious fit measures. Three of the most basic measures of absolute fit are the likelihood-ratio Chi-square, the goodness of fit index (GFI), and the root mean square error of approximation (RMSEA). In this analysis, the Chi-square value of the measurement model was 1197.97 with 225 degrees of freedom (Table 26) was statistically significant at the $p<.000$ level. This is

generally thought to indicate poor fit. However, the GFI value of .87 is at an acceptable level. The RMSEA has a value of .08, which meets the acceptable criterion of .08 or less.

Table 26

Measurement Model Absolute Fit Measures

Normal Theory Weighted Least Squares Chi-Square = 1197.37 (P = 0.0)
Degrees of Freedom = 225
Root Mean Square Error of Approximation (RMSEA) = 0.080
Goodness of Fit Index (GFI) = 0.87
Adjusted Goodness of Fit Index (AGFI) = 0.84

Measurement Model Specification

After the overall model had been accepted, each of the constructs was evaluated separately by (1) examining the indicator loadings for statistical significance and (2) assessing the construct's reliability and variance extracted (Hair et. al. 1995). First, an examination of *t*-values associated with each of the loadings indicated that for each variable they exceeded the critical values to suggest unidimensionality on each construct. Unidimensionality is an assumption underlying the calculation of reliability and is demonstrated when the indicators of a construct have acceptable fit on a single factor. All indicators showed evidence of statistical significance for the constructs (Table 27). Since no indicators had loadings so low that the model had to be re-estimated, the reliability and variance extracted measures (Table 27) were computed (Hair et. el. 1995).

Table 27

Factor Loadings, Reliabilities and Average Variance Extracted (A.V.E.)

	RSK	ELC	ADP	EXP	GLB
RT3	0.64	--	--	--	--
RT4	0.70	--	--	--	--
RT6	0.66	--	--	--	--
RT7	0.65	--	--	--	--
EI1	--	0.72	--	--	--
EI2	--	0.70	--	--	--
EI3	--	0.69	--	--	--
EI4	--	0.60	--	--	--
EI5	--	0.59	--	--	--
EI6	--	0.51	--	--	--
AD1	--	--	0.84	--	--
AD2	--	--	0.87	--	--
AD3	--	--	0.91	--	--
AD4	--	--	0.87	--	--
AD5	--	--	0.74	--	--
EX1	--	--	--	0.84	--
EX2	--	--	--	0.88	--
GI1	--	--	--	--	0.76
GI2	--	--	--	--	0.82
GI3	--	--	--	--	0.72
GI4	--	--	--	--	0.78
GI5	--	--	--	--	0.75
GI6	--	--	--	--	0.55
Reliability	.759	.8026	.9279	.853	.8742
A.V.E.	.4411	.4072	.7214 .	7437	.5401

RSK = Risk Taking (R3, R4, R6, R7)
ELC = Product Specific (Electronic) Innovativeness (E1, E2, E3, E4, E5, E6)
ADP = Adoption (AD1, AD2, AD3, AD4, AD5)
EXP = Expertise (EX1, EX2)
GLB = General Innovativeness (GI1, GI1, GI3, GI4, GI5, GI6)

After examination of the loadings for each indicator, the principal approach used in assessing the measurement model is the composite reliability and average variance extracted measures for each construct (Hair et. al. 1995). Calculating reliability is beneficial because it is a measure of the internal consistency of the construct indicators, depicting the degree to which they "indicate" the common latent (unobserved) construct (Hair et. al. 1995, p. 641). Thus, more reliable measures provide a researcher greater confidence that the individual indicators are all consistent in their measurements.

In terms of reliability, all exogenous and endogenous constructs exceed the suggested level of .70 (Hair et. al. 1995). Reliabilities were .9279, .8026, and .8742 for likelihood of new product adoption, product category-specific innovativeness and general consumer innovativeness, respectively. For risk taking and expertise, the reliabilities were .759 and .853, respectively. In the average variance extraction computation, likelihood of new product adoption, general consumer innovativeness, and expertise exceed the threshold value of .50 (Hair et. al. 1995). Product category-specific consumer innovativeness and risk taking slightly miss the .50 guideline, producing .41 and .44, respectively. For all constructs, the indicators should be sufficient in terms of how the model is specified for exploratory research.

Structural Model Fit

After assessing the overall model and aspects of the measurement, it is necessary to examine the estimated coefficients for both practical and theoretical implications (Hair et. al. 1995). Measures for the constructs were summated to create single indicators for

each construct, allowing the creation of a correlation matrix (Table 28). Examining the matrix for multicollinearity reveals that all correlations are below the threshold of .7 (Mueller1996).

Table 28

Structural Model Correlation Matrix

	ADOPTION	ELECINNO	GLOBINNO	EXPERTIS	RISKTAKE
ADOPTION(a)	1.000				
ELECINNO(b)	0.316	1.000			
GLOBINNO(c)	0.142	0.363	1.000		
EXPERTIS(d)	0.088	0.292	0.621	1.000	
RISKTAKE(e)	0.051	0.219	0.279	0.202	1.000

(a) ADOPTION = Likelihood of New Product Adoption
(b) ELECINNO = Product Category-Specific (Electronic) Consumer Innovativeness
(c) GLOBINNO = General Consumer Innovativeness
(d) EXPERTIS = Expertise
(e) RISKTAKE = Risk Taking

Measurement errors were calculated from the measurement model using the equation "1 – reliability" (Hair et. al. 1995). The calculated errors were assigned to the theta-delta and theta-eps matrices (Appendix C). The goodness-of-fit measures reveal a

Chi-Square of 82.72 with 5 degrees of freedom at p=.000 level of significance,. RMSEA is slightly outside the threshold. However, GFI is very good at a value of .95, AGFI=.86, NFI=.90, and CFI=.90, NNFI=.80 (Table 29).

Table 29

Structural Model Fit Measures

Normal Theory Weighted Least Squares Chi-Square = 82.72 (P = 0.00)
Degrees of Freedom = 5
Root Mean Square Error of Approximation (RMSEA) = 0.15
Goodness of Fit Index (GFI) = 0.95
Adjusted Goodness of Fit Index (AGFI) = 0.86
Normed Fit Index (NFI) = .90
Comparative Fit Index (CFI) = .90

There must be theoretical and empirical support in order to select an alternate model. Such respecifications that do not increase model parsimony and lack theoretical support are not advisable (Hair et. al. 1995). For a competing model using the constructs in this study, theoretical support is insufficient. Though modification indices can be useful in assessing the impact of theoretically based model specifications, a researcher should never make model changes based solely on the modification indices (Hair et. al. 1995). Model modification must have a theoretical justification before being considered, and even then the researcher should be quite skeptical about the changes (MacCullum

1986). No present theories support modifications to the existing model. Therefore, the proposed model is accepted until additional constructs can be added and measures refined, or causal relationships respecified by theory (Hair et. el. 1995).

Hypothesis testing

Hypothesis one produced significant results, with a path coefficient of .39 at $p<.05$ and t-value of 8.19. The standardized path coefficients are derived from the beta and gamma matrices that have included the effects of measurement error, in the structural equation model estimation (Table 30). There is evidence for the causal relationship between product category-specific consumer innovativeness and likelihood of new product adoption (Figure 4). This is reasonable, according to Buss (1989), narrowly defined traits tend to be better predictors of a particular behavior.

Table 30

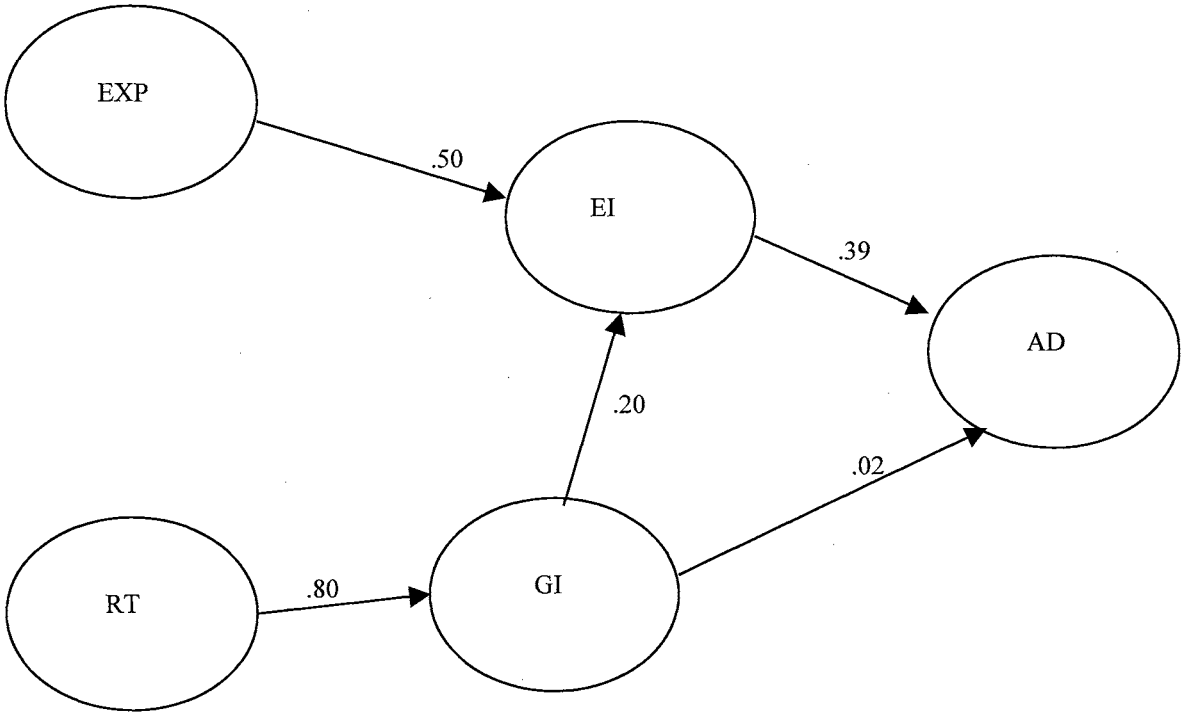
Endogenous Construct Correlations

BETA MATRIX

	ADOPTION	ELECINNO	GLOBINNO
ADOPTION	- -	0.39 (0.05) 8.19	0.02 (nonsig.) 0.40
ELECINNO	- -	- -	0.20 (0.05) 6.39
GLOBINNO	- -	- -	- -

Figure 4

Path Coefficients



EXP = Expertise
EI = Product category-specific (electronic) consumer innovativeness
AD = Likelihood of New Product Adoption
RT = Risk Taking
GI = General Consumer Innovativeness

Hypothesis two was significant, showing evidence of a relationship between product category-specific innovativeness and expertise, providing a path coefficient of .50 and t-value of 18.64 at $p<.05$. In LISREL, gamma matrices provide the correlations between exogenous constructs and endogenous constructs (Table 31). This finding should

be a valuable contribution to the consumer innovativeness literature. Reasonably, consumer innovators within specific product categories conduct a more thorough search for product information and are, hence, more knowledgeable within that particular product category than non-innovators. Therefore, product category-specific consumer innovators should differ from non-innovators in the content, amount, and organization of their domain knowledge.

Table 31

Exogenous-Endogenous Parameter Estimates

GAMMA MATRIX

	EXPERTIS	RISKTAKE
ADOPTION	- -	- -
ELECINNO	0.50 (0.05) 18.64	- -
GLOBINNO	- -	0.80 (0.05) 20.53

Hypothesis three, the relationship between general consumer innovativeness and the likelihood of new product adoption showed evidence of mediation through product category-specific consumer innovativeness. The mediation effect of product category-specific consumer innovativeness between the relationship of general consumer

innovativeness and the likelihood of new product adoption is consistent with Goldsmith, Freiden, and Eastman (1995). The path coefficient between general consumer innovativeness and the likelihood of new product adoption was very weak at .02, with a t-statistic of .40 at $p<.05$. Evidently, general or more abstract constructs are more useful in predicting lower level abstract concepts than in predicting overt behavior (Goldsmith Freiden, and Eastman 1995).

This occurrence is explained by Moskowitz (1982, p. 755): "It is possible that a broadly defined construct subsuming many referents (e.g. dependency) will have a lower average intercorrelation among its referents than a narrow construct (e.g. seeking help). However, the broad construct will have the advantage of predicting diverse behaviors at modest levels of accuracy, whereas the narrow construct will predict with high accuracy within a limited range and very poorly outside that range." Buss (1989) makes the analogy that tennis performance is better predicted by tennis ability than by general athletic ability. Specifically, within a marketing context, these results indicate that direct examination of the link between general consumer innovativeness and likelihood of new product adoption is misleading because it does not consider the mediating role of product category-specific consumer innovativeness (Goldsmith Freiden, and Eastman 1995).

Hypothesis four was statistically significant, showing support for a very strong positive relationship between risk-taking and general consumer innovativeness, producing a path coefficient of .80 and t-value of 20.53 at $p<.05$. Throughout the literature on consumer innovativeness, one of the more popular variables of study is risk taking. This study confirms previous findings that risk taking correlates with general consumer innovativeness.

LISREL provides squared multiple correlations for each structural equation, which measures the strength of a linear relationship (Joreskog and Sorbom 1996). The squared multiple correlations were .12, .46, and .52 for likelihood of new product adoption, product category-specific consumer innovativeness and general consumer innovativeness, respectively. A squared multiple correlation coefficient in structural equation modeling may be interpreted like an R-squared in multiple regression.

The squared multiple correlation coefficient is the proportion of variance in a variable explained by all other variables in a model that have a direct effect on it (Bollen 1989, p. 200). That is, the value for likelihood of new product adoption means that twelve percent of the variance is explained by product category-specific consumer innovativeness and general consumer innovativeness. Likewise, expertise and general consumer innovativeness explain forty-six percent of the variance in product category-specific consumer innovativeness.

Also, LISREL (Joreskog and Sorbom 1996) provides squared multiple correlations for each observed variable separately, which gauge the systematic variance in the observed variables that can be explained by the predictor variables in the measurement model (Bollen 1989, p. 221). The squared multiple correlations for expertise and risk taking were .93 and .83. Thus, the indicators of expertise and risk-taking account for ninety-three percent and eighty-three percent of their variance, respectively. In structural equation modeling, the squared multiple correlation coefficient offers a viable alternative to reliability estimation (Bollen 1989, p. 222).

Hypothesis five showed statistical significance. The path coefficient was .20, with a t-value of 6.39 at $p<.05$. Therefore, there is a direct causal relationship between general

consumer innovativeness and product category-specific consumer innovativeness. This is consistent with the findings of Goldsmith et. al. (1995) and Mowen et. al. (1998), whereby product category-specific consumer innovativeness behaves as a mediator between general consumer innovativeness and the likelihood of new product adoption. This study, also, replicates Goldsmith et. al.'s (1995) finding that product category-specific consumer innovativeness is more highly correlated with the likelihood of new product adoption than is general consumer innovativeness. Also, the relationship between general consumer innovativeness and product category-specific consumer innovativeness is more highly correlated than is the relationship between general consumer innovativeness and the likelihood of new product adoption.

To test hypotheses 6A and 6B, the moderating effect of alliance image on consumer innovativeness and the likelihood of new product adoption, a multi-group analysis was performed. Using SPSS prior to LISREL data input, the observations were sorted one through four, coinciding with a specific scenario (see table 32). This facilitated a categorization of observations by scenario in LISREL to permit an analysis by individual groups.

Table 32

Alliance Scenarios

Group	Scenario
1	Strong Company Image – Weak Company Image Alliance
2	Weak Company Image – Strong Company Image Alliance
3	Weak Company Image – Weak Company Image Alliance
4	Strong Company Image – Strong Company Image Alliance

The overall model fit was significant with a Chi-Squared of 92.07, with 20 degrees of freedom, RMSEA = .15, and GFI = .91. A nested goodness-of-fit strategy was used to test the interaction effects (Jaccard and Wan 1996). Two steps are required in this process. The first step involves a "multi-group" solution in which LISREL derives parameter estimates for each group separately as well as a measure of goodness of fit of the model for all groups simultaneously. This step provides perspectives on how well the model fits the data when LISREL is permitted to estimate coefficients in each group separately and without constraint across groups.

The second step is to re-estimate the model while imposing an equality constraint on the solution. Specifically, LISREL is permitted to fit the data as best it can using the model as a framework, with the constraint that the regression coefficients for product category-specific consumer innovativeness and the likelihood of new product adoption be equal for all four groups. If there is no interaction effect and the path coefficients are equal, then the constraint would not adversely affect model fit relative to the analysis in step one. If there is a reasonably sizable interaction effect, then the constraint would adversely affect model fit. The results from the constrained solution are then compared to the unconstrained solution.

The unconstrained model has Chi-Squared = 92.07, with 20 degrees of freedom and $p < .001$. The constrained model has Chi-Squared = 92.23, with 23 degrees of freedom and $p < .001$. A Chi-Squared difference test of subtracting the fit value of the unconstrained model from the constrained model provides a Chi-Squared of .16, with 3 degrees of freedom and is not statistically significant. Since the difference in model fit is not statistically significant, this indicates that no interaction exists. By making the

assumption that no interaction effect exists, that is, all groups are the same, there is no significant affect on the model. So, there is no reason to compare each group.

Evidently, there is no moderating effect of alliance image between product category-specific consumer innovativeness and the likelihood of new product adoption, failing to support H6A. To test hypothesis 6B, the same procedure was conducted. In this case, the relationship between general consumer innovativeness and the likelihood of new product adoption was constrained. The constrained model Chi-Squared = 96.53, with 23 degrees of freedom and $p < .001$. A Chi-Squared difference test produced Chi-Squared = 4.46, with 3 degrees of freedom and $p < .001$. This was statistically significant, suggesting a moderating effect of alliance image between the relationship of general consumer innovativeness and the likelihood of new product adoption (Table 33).

Table 33

Moderating Effect of Alliance Image

Groups Compared	Chi-Squared	df	Chi-Squared Difference	df
SW-WS	92.07	21	ns	
SW-WW	92.08	21	ns	
SW-SS	95.94	21	3.87*	1
WS-WW	92.11	21	ns	
WS-SS	95.48	21	3.41*	1
WW-SS	95.65	21	3.58*	1

*p < .001

SW = Strong-Weak Alliance
WS = Weak-Strong Alliance
WW = Weak-Weak Alliance
SS = Strong-Strong Alliance

ns = non-significant

A comparison of the groups suggests a product category consumer innovativeness mediation effect for the alliance of two companies with strong images between general consumer innovativeness and the likelihood of new product adoption. Additionally, we can view the significance of the path coefficients (Table 34), suggesting support for H6B (Figure 5), for "strong-strong" company images. However, the effect involving weak company images appears nonsignificant. It was expected that alliance image, weak or strong, would moderate the relationship between general consumer innovativeness and the likelihood of new product adoption, as well as, the relationship between product category-specific consumer innovativeness and the likelihood of new product adoption.

A closer examination of the results reveals a slightly negative path coefficient between general consumer innovativeness and the likelihood of new product adoption when a company with a weak image is involved. This suggests that although general consumer innovators are risk takers and willing to try new products, they are less likely to buy new products involving a company with a weak image. Overall, the paths between general consumer innovativeness and the likelihood of new product adoption are not significant except for the "strong-strong" case. In each case where there is one weak partner, the general consumer innovativeness effect on the likelihood of new product adoption is mediated by product category-specific consumer innovativeness.

Table 34

Alliance Image Results

Group	Path Coefficient	*t*-value	Significance
Strong-Weak Alliance			
EI-Adoption(a)	.39	5.56	.000
GI-EI(b)	.24	4.65	.000
GI-Adoption(c)	-.02	.35	ns
Weak-Strong Alliance			
EI-Adoption	.43	4.14	.000
GI-EI	.23	2.73	.006
GI-Adoption	-.02	.22	ns
Weak-Weak Alliance			
EI-Adoption	.41	4.75	.000
GI-EI	.16	2.93	.002
GI-Adoption	-.01	.14	ns
Strong-Strong Alliance			
EI-Adoption	.33	1.95	.05
GI-EI	.19	2.48	.015
GI-Adoption	.25	1.96	.05

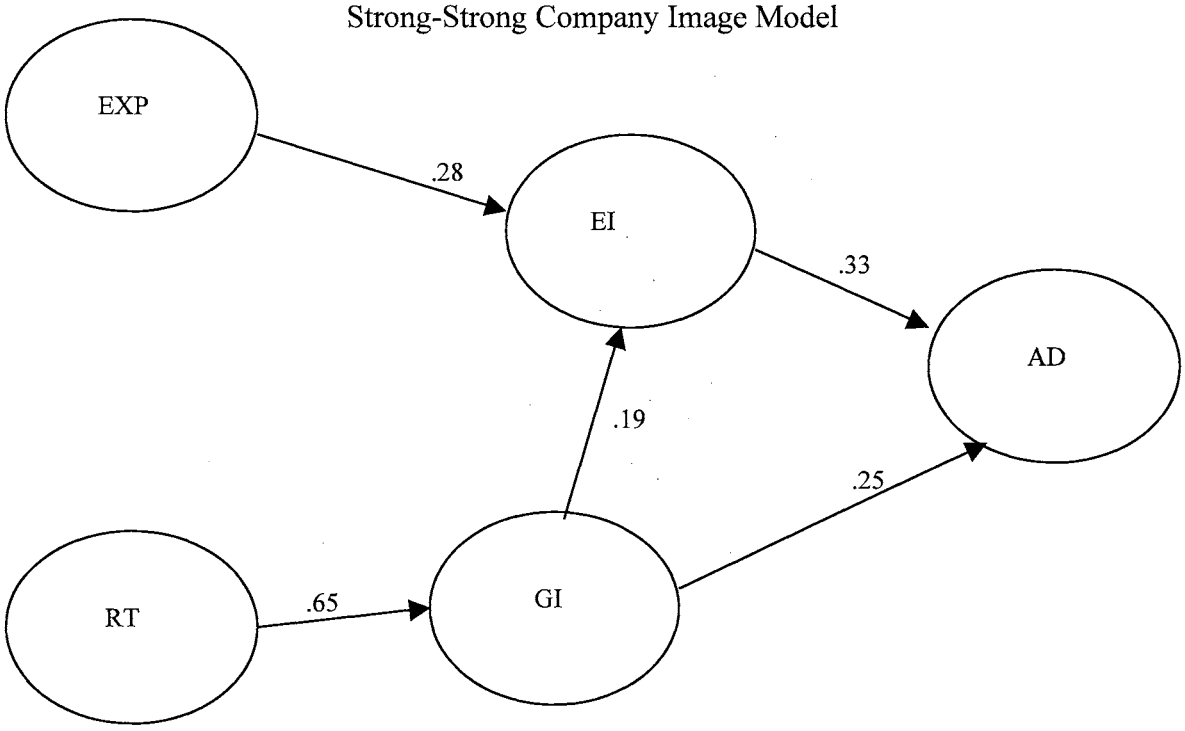
ns = nonsignificant

Overall Model Fit: Chi-Squared = 92.07 df = 20 p = .00000 RMSEA = .147

(a) Product Category-Specific (Electronic) Consumer Innovativeness and Likelihood of New Product Adoption Link
(b) General Consumer Innovativeness and Product Category-Specific Consumer Innovativeness Link
(c) General Consumer Innovativeness and Likelihood of New Product Adoption Link

Figure 5

Strong-Strong Company Image Model



EXP = Expertise
EI = Product category-specific (electronic) consumer innovativeness
AD = Likelihood of New Product Adoption
RT = Risk Taking
GI = General Consumer Innovativeness

Finally, the respondents were asked to "Please circle the company you think is the lead company in this alliance." One-third of the respondents failed to identify the proper

"lead company". Eighty percent of those who identified the wrong lead company, identified the company with the strong image. Ten percent of those who identified the wrong lead company, identified the first company described in the scenario company. It is speculated that the other ten percent who incorrectly identified the lead company were apathetic about their response. Another consideration, however, is that the phrase "lead company" was ambiguous to the readers.

CHAPTER V

DISCUSSION

This chapter will review research findings, discuss limitations of the study, and offer recommendations for future research. In this chapter, the first section presents conclusions relevant for business practitioners, the second section presents conclusions and recommendations for researchers, the third section presents limitations of the study, and the fourth section suggests future research. There is definite theoretical and practical relevance for consumer innovativeness research. The deeper the understanding of the customer, the greater is the likelihood of new product success (Kotler 1994).

Managerial Implications

Unavoidably, dilemmas exist in all industries. Given the intense competition in most markets today, companies that fail to develop new products are exposing themselves to great risk. Their existing products are vulnerable to changing consumer needs and tastes, new technologies, shortened product life cycles, and increased domestic and foreign competition (Kotler 1994). The research questions raised by this study encompass a number of practical concerns. The study has relevance for innovative consumer behavior, alliance image and new product development. This research addresses the effect of consumer innovativeness on the relationship between organization image and the likelihood of new product adoption with a strong/weak lead company and weak/strong secondary company alliance. Similarly, in marketing, various strategies and

tactics can alter or affect the power of specific claims, and ultimately the probabilities of consumers purchasing various new products.

Segmentation is one of the most important concepts in marketing. The ability to adequately segment consumers is beneficial to all companies. Companies can focus different resources on innovative consumers than on non-innovators. Besides segmentation, new product development by alliances has applications in pricing, distribution, and various forms of promotion. For example, product category innovators may more likely seek information from detail oriented sources via the internet and trade journals, or media that requires more intense mental processing. The visual stimuli of television advertisements or auditory messages of radio may persuade general innovators.

Innovators use more environmental stimuli, taking in more of the data that impinge on them and using them more actively to find a solution (Foxall 1995, p276). As a consequence, product category specific innovators would seek out, interpret, and process a variety of involved, descriptive information, while evaluating superficial information like company images.

Innovators might perform different decision-making processes. They are like experts, who make narrower and more accurate judgments than novices (Spence and Brucks 1997). Additionally, experts differ from novices in the amount, content, and organization of their domain knowledge (Chi, Glaser, and Rees 1982). Product category innovators should be less likely to rely on symbols and cues like organization image, and rely more on product characteristics to make adoption decisions.

These results have implications for the work of Robertson and Myers (1969), who insisted that the investigation of consumer innovativeness have little pragmatic

importance. Since consumer innovativeness is useful for the concepts of segmentation, targeting, and positioning, hypothesis one has particular relevance for business, because product category-specific innovators are more likely to buy new products than non-innovators. The identification of consumer innovators provides marketers a key market segment. Furthermore, innovators represent an important, distinguishable, and profitable target market. Companies might possibly take advantage of positioning concepts by promoting products as newer than the competition.

Hypothesis two suggests that companies can focus different resources on innovative consumers through different methods of marketing communication, since expertise is correlated with product category-specific consumer innovativeness. Innovators utilize information sources that are more impersonal and "cosmopolite" than later adopters (Rogers 1962). For example, innovators may more likely seek information from sources supplying detailed and descriptive information such as the internet and trade journals, or media that require more intense mental processing. Possibly, non-innovators will more likely be persuaded by the visual stimuli of television and print advertisements. Innovators utilize a greater number of different information sources than non-innovators, and are in closer contact with the origin of new ideas (Rogers 1962). This emphasizes the importance of supplying messages to innovators from multiple promotional mix elements. Possibly, innovators attempt to minimize risk through information seeking.

Throughout innovativeness research risk-taking is one of the more prevalent characteristics used to examine innovativeness. This study shows evidence for that assertion in hypothesis four. In general, most consumers are risk averse. There is empirical support that general consumer innovativeness is associated with risk taking.

Therefore, risk-taking characteristics should be fully understood by developers of new products. Apparently, innovators make risk-reward trade-offs. Inevitably, consumers who like taking risks are more likely to try new products in general. Advertisements promoting risk and uncertainty should appeal to general innovators. Also, sales promotions using sampling could be targeted for general consumer innovators, since they are willing to try new and novel things.

A proficient knowledge of supply side variables should also improve a company's competitive position. It should prove beneficial for organizations to have useful information on alliance strategies. In many cases, strategic alliances encounter difficulties that can often lead to disappointing performance (Larsson et. al. 1998). Therefore, it is in the best interest of partnering organizations to understand the possible pitfalls of such business ventures. The results of this research indicates that an alliance between two strong imaged companies increases the likelihood that general consumer innovators will purchase products created by that alliance. This study shows evidence that a company with a strong image should seek out other companies with strong images when considering an alliance partner. Furthermore, it should be emphasized that a company with a weak company image pursue strategies to improve a weak company image to maximize marketability in an already competitive environment.

The relationship between product category-specific consumer innovativeness and the likelihood of new product adoption is strongest when a company with a weak image initiates an alliance with a company with a strong image (Scenario table), with a correlation of .43. This supports the idea that consumer innovators have more information about a product's benefits and features if they are more willing to buy from this alliance

type than when a strong imaged company initiates the alliance or an alliance of two strong imaged companies. With company and alliance image in mind, it is possible that carefully mixing the components of the marketing mix might influence consumer attitudes, intentions, and behavior.

Theoretical Implications

This study provides some support for previous research on consumer innovativeness, as well as company image. Due to the substantial controversy in explaining innovativeness, it is not surprising that differing profiles of consumer innovators would be found for different types of products (Dickerson and Gentry 1983). This study helps resolve that issue by showing evidence of a mediating effect of product category-specific consumer innovativeness on general consumer innovativeness, through the efficacy of a hierarchical model of consumer innovativeness. Instead of viewing product category-specific consumer innovativeness and general consumer innovativeness as competing philosophies, they should be applied jointly.

Given the vast amount of research done in both personality and marketing research on consumer innovativeness, a model is needed that unites the literature and provides an empirically testable method to describe the role of personality in the innovation process (Midgley and Dowling 1978, p. 605). A cohesive explanation of the role of personality and personality theory in the process of innovation is important. This study opens the door for possibilities of including other personality traits within a hierarchical model. The role of personality in innovation helps explain the issue in the marketing innovation literature of general versus product category-specific innovators, or

levels of consumer innovativeness. Potentially, other traits relevant to consumer behavior can be studied this way.

The propensities of consumers to adopt novel products, whether they are ideas, goods, or services, can play an important role in theories of brand loyalty, decision making, preferences, and communication (Hirschman 1980). Researchers should consider support for consumer innovativeness with other theories, since this construct has implications for theory building with other constructs.

There are research implications for studies of cognitive structures and information processing. This study showed that expertise has a positive relationship with product category-specific consumer innovativeness. According to Spence and Brooks (1997), an expert is someone who has acquired domain-specific knowledge through experience or training. This assertion raises the question of whether or not consumer innovativeness can be socialized or learned. If innovativeness is a socializable characteristic, then this would support the argument by Venkatraman and Price (1990).

The debate will likely continue between the supporters of consumer as a socialized characteristic versus the supporters of innovativeness as a personality trait. One of the broadly agreed upon theories regarding consumer innovativeness associates the tendency with risk taking. There are three possible explanations for risk taking tendencies (Mowen and Minor 1998): normative, hedonic, and personal efficacy motives. The normative perspective is based on the normative need comply with the desires and expectations of others. Hedonic motives predominate when people seek arousal, pleasure, fun, and incorporation into "the flow". Personal efficacy motives derive from the pursuit of the feeling of achievement and increasing self-confidence.

This study developed a short, valid, and reliable scale to measure high tech company image. This unidimensional scale allows researchers to follow a developmental process to create new survey instruments for other studies. Also, this shows evidence that it is possible to manipulate company image with the application of a scenario. A brief description entailing a company's history, analysis, and rating provided an effective method of eliciting consumer opinion regarding their perception of a company, it's image, alliance with another company, and the development of a new product.

Limitations

There were a few shortcomings associated with this study. First of all, only electronics was used to represent product category-specific consumer innovativeness. Moreover, only a DVD player was used to represent the product category. Possibly, this particular DVD player didn't test well with certain respondents. So, it is possible that this is not the best representation of product category-specific consumer innovativeness. In addition, it is possible that one specific product restricted the predictive and explanatory capability of the general consumer innovativeness measure. Secondly, the study used fictitious companies and scenarios for measurement. Although, they were pretested, it is possible that the fictitious companies and scenarios did not adequately provide the intended effect. Respondents might not have taken the survey seriously because of the "unheard of" company names and profiles. Thirdly, the airport as a site selection may not provide a sample that is generalizable to the consuming population, since a non-probability sample limits generalizability of the findings. Finally, the unequal group sizes

demonstrate a lack of control in gathering the research. Better data collection management should prove helpful for a more precise survey instrument attainment.

Future Research

There are several opportunities for future research based on this study. If replicated and extended in future research, the results of this study offer supportive evidence that should progress marketing research toward a resolution of the inconsistencies found in consumer innovativeness literature. One, consider utilizing a different product category and possibly more than one product category simultaneously. A divergent set of psychological traits is predictive of different product category-specific innovativeness tendencies (Mowen, Christia, and Spears 1995). These authors found that a common set of psychological traits is predictive of the general consumer innovativeness trait, which partially mediated the effects of the psychological traits on product category-specific consumer innovativeness and new product adoption for different product categories. This indicates an opportunity to examine more basic traits and different product categories that might help examine direct effects on the category-specific traits.

Two, based on sufficient advances in theory, evaluate alternative models involving general and product-category-specific consumer innovativeness in LISREL. Adequate theoretical support should prompt the evaluation of constrained and unconstrained alternatives of the model specified in this study using more constructs.

Three, test only real or real versus fictitious companies and company descriptions. In the comments section of the survey, several respondents stated that they had "never heard of these companies." Therefore, the development of the new company image scale

provides actual companies an excellent opportunity to gather evaluations of their companies from various constituents.

Four, examine an alliance of three or more real and/or fictitious companies simultaneously. The evaluation of the image of an alliance involving more than two companies should be possible by uniting them in a similar scenario. Fourth, examine specific types of risk in an analysis. In the marketing literature, there are several types of risk, among them are: financial, time, opportunity-loss, social, physical, psychological, and performance. Isolating specific types of risk should prove beneficial for marketing researchers and practioners.

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Appendix A

Survey Instrument

Consumer Behavior Study

I am a doctoral student at Oklahoma State University and need your help to collect data for my dissertation. The research will help us understand the purchase patterns of consumers. The survey will take approximately ten to fifteen minutes. Please understand that there are no right or wrong answers. Your responses will remain strictly anonymous and confidential. All results will be presented in aggregate form only.

Your participation is completely voluntary and you have the ability to terminate your participation in this survey at any time.

Thanks in advance for your time and consideration.

On the following pages are profiles of two consumer product manufacturers, including history, analysis, and rating by an industry expert. The ratings range from A to F, with A being the highest and F being the lowest. A description of the DVD player is included. Please read the company and product descriptions and complete the survey that follows.

Part I. COMPANY PROFILE [Neutech]* HQ: Albany, N.Y.

COMPANY HISTORY

[Neutech] was formed in (1970)** in Albany, New York, by engineers John and Paul Roberts to create, manufacture, and distribute consumer audio and video equipment. The company produced a variety of radios and televisions. During the 1980's, the company began expanding its product offerings, by providing audio and video support equipment. In (1996), the company shifted a major focus towards providing DVD technology. As of 1998, approximately (60%) of the company's revenue came from the DVD players it produced. Most of the company's products are sold through retailers to the consumers.

COMPANY ANALYSIS

[Neutech] is considered by many experts to be an industry (leader) in technological innovations. The company has earned over (100) patents in recent years, while the industry average was 50 patents. The company (continually strives to remain on the cutting edge) of technology. Management and employees are (well trained and knowledgeable). [Neutech] is (revered by its competition for its organization and professionalism). The company's stock value continues to (rise) at or above the industry average.

COMPANY RATING: (B)

Part II. COMPANY PROFILE [Boxtech]* HQ: Albany, N.Y.

COMPANY HISTORY

[Boxtech] was formed in (1971)** in Albany, New York, by engineers John and Paul Roberts to create, manufacture, and distribute consumer audio and video equipment. The company produced a variety of radios and televisions. During the 1980's, the company began expanding its product offerings, by providing audio and video support equipment. In (1997), the company shifted a major focus towards providing DVD technology. As of 1998, approximately (63%) of the company's revenue came from the DVD players it produced. Most of the company's products are sold through retailers to the consumers.

COMPANY ANALYSIS

[Boxtech] is considered by many experts to be an industry (laggard) in technological innovations. The company has earned (exactly 25) patents in recent years, while the industry average was 50 patents. The company (tends to be a follower) of technology. Management and employees are (average). [Boxtech] is (not considered a threat). The company's stock value continues to (under-perform) the industry average.

COMPANY RATING: (D)

* Brackets indicate alternate [Boxtech or Neutech] fictitious company
** Parentheses denote alternate (strong or weak) company characteristics

The two preceding companies formed an alliance to develop and produce a new DVD player. Please rate this alliance of companies on each of the following characteristics by circling the number that most closely represents your perception:

conservative	1	2	3	4	5	6	7	progressive
conventional	1	2	3	4	5	6	7	extraordinary
traditional	1	2	3	4	5	6	7	innovative

Part III. Please rate the extent that you agree with the following statements.

	Strongly disagree						Strongly agree
When I eat out, I like to try the most unusual items the restaurant serves even if I am not sure I would like them.	1	2	3	4	5	6	7
I am the kind of person who would try any new product once.	1	2	3	4	5	6	7
When I go to a restaurant, I feel it is safer to order dishes I am familiar with.	1	2	3	4	5	6	7
I am cautious in trying new/different products.	1	2	3	4	5	6	7
Even for an important date or dinner, I would not be wary of trying a new or unfamiliar restaurant.	1	2	3	4	5	6	7
I would rather stick with a brand I usually buy than try something I am not very sure of.	1	2	3	4	5	6	7
I never buy something I don't know about at the risk of making a mistake.	1	2	3	4	5	6	7
If I buy appliances, I will buy only well established brands.	1	2	3	4	5	6	7
I enjoy taking chances in buying unfamiliar brands just to get some variety in my purchases.	1	2	3	4	5	6	7

Part IV. Please answer the following questions by circling your appropriate response.

	Not at all						Very
How knowledgeable are you about electronics products?	1	2	3	4	5	6	7
How interested are you in electronics products?	1	2	3	4	5	6	7

Part V. Please rate the extent that you agree with the following statements.

	Strongly disagree						Strongly agree
I am reluctant about adopting new ways of doing things until I see them working for people around me.	1	2	3	4	5	6	7
I rarely trust new ideas until I can see whether the vast majority of people around me accept them.	1	2	3	4	5	6	7
I am aware that I am one of the last people in my group to accept something new.	1	2	3	4	5	6	7
I must see other people using new innovations before I will consider them.	1	2	3	4	5	6	7
I am generally cautious about accepting new ideas.	1	2	3	4	5	6	7
I tend to feel the old way of living and doing things is the best way.	1	2	3	4	5	6	7
In general, I am the last in my circle of friends to know of the latest new electronic entertainment equipment.	1	2	3	4	5	6	7
Compared to my friends, I own very little electronic entertainment equipment.	1	2	3	4	5	6	7
In general, I am among the last in my circle of friends to buy new electronic equipment when it appears.	1	2	3	4	5	6	7
I know the names of new electronic entertainment equipment before other people do.	1	2	3	4	5	6	7
If I heard that new electronic equipment was available in the store, I would be interested enough to buy it.	1	2	3	4	5	6	7
I will buy a new item of electronic entertainment equipment even if I had little experience with it.	1	2	3	4	5	6	7

Part VI. Product Info: DVD2000 -

The one size fits all natural centerpiece of your home theatre. Rotary change and alternate DVDs, VCDs and CDs.
The features include
* Front-loading, 5-disc Rotary Design allows you to change any of the 4 non-playing discs without disturbing the playing disc.
* Quick Disc Rotation System allows you to quickly switch from disc to disc at the touch of a button.
* Front Panel LED for Disc Information conveniently displays the location of loaded discs, which disc is playing and the position of disc tray when drawer is open.
* Sequential Play, Program Play (CD), and Random Play (CD)
* Component Video Out allows for the perfect transmission of digital video to compatible video equipment with component video inputs.
* Dialogue Enhancer1 increases the center channel volume of a Dolby Digital2 5/5.1-channel disc, making the dialogue easier to hear during loud scenes.
* Advanced Virtual Surround Sound3 creates the surround sound effect using only two front speakers with a wide range from left to right.

Based only on the information given, please circle the appropriate response that best describes the likelihood that would purchase a DVD player from the alliance of companies described previously?

Unlikely	1	2	3	4	5	6	7	Likely
Nonexistent	1	2	3	4	5	6	7	Existent
Improbable	1	2	3	4	5	6	7	Probable
Impossible	1	2	3	4	5	6	7	Possible
Uncertain	1	2	3	4	5	6	7	Certain

Part VII. Please circle correct response.

Gender: Male Female
Ethnicity: Asian Black Hispanic Native-American White Other
Age: 18-25 26-35 36-45 46-55 56-65 >65
Income: <10,000 10,001-20k 21,001-30k 30,001-40k 50,001-60k >60k
If employed, job title: _____
What do you think was the purpose of this study?

Thanks for your participation!

Appendix B

LISREL Measurement Model Syntax

```
DA NI=23 NO=673
RA=Measure
LA
 RT3 RT4 RT6 RT7 EI1 EI2 EI3 EI4
 EI5 EI6 AD1 AD2 AD3 AD4 AD5 EX1
 EX2 GI1 GI2 GI3 GI4 GI5 GI6
SE
 RT3 RT4 RT6 RT7 EI1 EI2 EI3 AD1 AD2 AD3 AD4 AD5 EX1
 EX2 GI1 GI2 GI3 GI4 GI5 GI6 /
MO NX=20 NK=5
LK
 RSK ELC ADP EXP GLB
FI LX 4 1 LX 7 2 LX 12 3 LX 14 4 LX 20 5
VA 1 LX 4 1 LX 7 2 LX 12 3 LX 14 4 LX 20 5
FR LX 1 1 LX 2 1 LX 3 1
FR LX 5 2 LX 6 2
FR LX 8 3 LX 9 3 LX 10 3 LX 11 3
FR LX 13 4
FR LX 15 5 LX 16 5 LX 17 5 LX 18 5 LX 19 5
PA PH
1
0 1
0 1 1
0 1 0 1
1 1 1 0 1
PD

        OU RS MI SC
```

Appendix C

LISREL Structural Model Syntax

```
STRUCTURAL MODEL
 DA NO=673 NI=6
 LA
 ALLIMAGE ADOPTION ELECINNO GLOBINNO EXPERTIS RISKTAK2
 RA=STRUCTURE
 SE
 ADOPTION ELECINNO GLOBINNO EXPERTIS RISKTAK2 /
 MO NX=2 NK=2 NE=3 NY=3 TD=FI TE=FI BE=FU PH=SY
 LK
 EXPERTIS RISKTAK2
 LE
 ADOPTION ELECINNO GLOBINNO
 FI LX 1 1 LX 2 2
 VA 1 LX 1 1 LX 2 2
 MA TD
 .15 .24
 FI LY 1 1 LY 2 2 LY 3 3
 VA 1 LY 1 1 LY 2 2 LY 3 3
 MA TE
 .07 .2 .13
 PA GA
 0 0
 1 0
 0 1
 PA PH
 1
 0 1
 PA BE
 0 1 1
 0 0 1
 0 0 0
 PD

 OU RS MI SC
```

VITA

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