# The Effect of Alliance Image on the Relationship between Consumer Innovativeness and New Product Adoption

**Jerome Christia PhD**[1]

**ARTICLE INFO**

Available Online April 2014
Key words:
Consumer Innovativeness;
Alliance Image;
New Product Adoption.

**ABSTRACT**

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). Increasingly, in the face of stiff competition, many companies are strategically forming alliances to create new products to appeal to innovators and non-innovators. 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. Strategic alliances form 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 focus 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. This paper links the concepts of new product adoption, alliance image and consumer innovativeness. There is evidence that alliance image between strong companies moderates the relationship between consumer innovativeness and the likelihood of new product adoption.

## 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). Lim and Park proposed a linkage between an individual's cultural context and psychological and behavioral outcomes (2013).

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).

[1] "Call Me MISTER" Program – Coordinator, Professor of Marketing, Wall College of Business, Coastal Carolina University, Conway, SC 29528-6054, (843) 349-2652, Email: christia@coastal.edu

## 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 to introduce successful innovative products that will be successful is increasingly felt due to 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, 1998). 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. The likelihood of adoption of new products or innovations is a result of both the characteristics of the adopter (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. Then, the process is followed by implementation of the new idea and 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. An organization's marketing strategy for an innovation determines its positioning, risk reduction, and market support.

## 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. 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. 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: There is a direct positive relationship between product category-specific consumer innovativeness and 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). 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.

## 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.

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). 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. This discussion suggests hypothesis two.

**H2: There is a direct positive relationship between general consumer innovativeness and the likelihood of new product adoption.**

### 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.

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 three.

**H3: 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, existing research on alliance image is sparse. Therefore, this study will review the literature on company image and make the logical connection to alliance image.

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. 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. 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.

Reasonably, it should prove worthwhile to use images not only to analyze and study single companies, but combinations of companies, as well. 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, alliance image is an overall evaluation of the combination of companies composing the partnership.

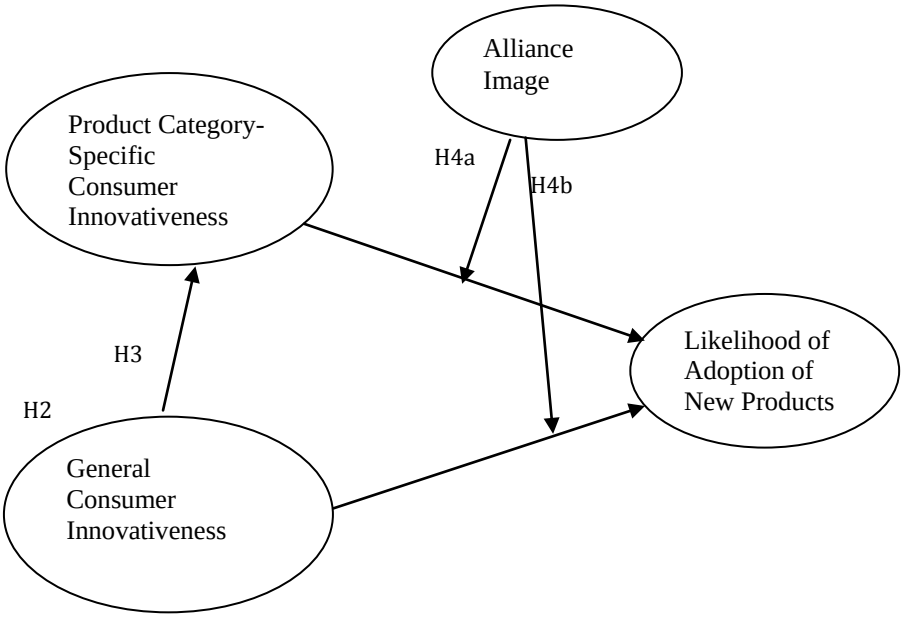
### Alliances

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). 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). All partners must work together to make it succeed (Chan and Heide, 1993).

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.

Since product category-specific consumer innovators 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 four and illustrated graphically in Figure 1.

**Figure 1: Conceptual Model of Innovativeness-Image-Adoption with hypotheses**




**H4a: 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.**

**H4b: 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.**

**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 an international 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 the independent variables (product category-specific consumer innovativeness, and general consumer innovativeness). 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).

## Research Methodology

This section aims to analytically link innovative consumers' new product adoption behavior to their image of those organizations involved. First, a series of pretests were done 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. 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 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.

## Independent Variables

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 reported a coefficient alpha of .85, and the coefficient alpha for product category specific innovativeness was .81.

9.2b High-Tech Company Image Scale Development

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 included elicitations, pre-tests, and two studies.

The three-item scale is shown in Table 1. The item – total correlations for the high-tech company image scale are: "Conservative-Progressive" - .7628, "Conventional-Extraordinary" - .7723, "Traditional-Innovative" - .7747.

**Table 1**

Hi-Tech Company Image Scale items

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

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 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, and general consumer innovativeness. Also, the respondents were asked which company they thought was the lead company in the alliance.

Also, the questionnaire 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.

## Research Findings

This section 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, 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.

Each of four groups collecting data 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.

## Reliability Assessment

Using SPSS statistical package, the dependent and independent measures were analyzed for reliability. 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 alpha for product category-specific consumer innovativeness (Electronic Innovativeness - EI) was .8202.

## 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).

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. 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.

**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 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.

**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. There is evidence for the causal relationship between product category-specific consumer innovativeness and likelihood of new product adoption. This is reasonable, according to Buss (1989), since narrowly defined traits tend to be better predictors of a particular behavior. **H1 is supported.**

Hypothesis two, 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). **H2 is not supported.**

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).

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.

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 three 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.**H3 is supported.**

To test hypotheses 4A and 4B, 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 2). This facilitated a categorization of observations by scenario in LISREL to permit an analysis by individual groups.

**Table 2** 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, 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, **H4Ais not supported**. To test hypothesis 4B, 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.

A comparison of the groups suggests a product category 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, suggesting **support for H4B**, 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 revealed 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.

## Discussion

This section will review research findings and implications, discuss limitations of the study, and offer recommendations for future research. In this section, the first subsection presents conclusions relevant for business practitioners, the second subsection presents conclusions and recommendations for researchers, the third subsection presents limitations of the study, and the fourth subsection 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

This study 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.

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.

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.

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. .

Alliances 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.

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).

### 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.

The debate will likely continue between the supporters of consumer as a socialized characteristic versus the supporters of innovativeness as a personality trait. 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, its image, alliance with another company, and the development of a new product.

## Limitations

The electronic device used in this study isn't necessarily representative of all electronic products. It is possible that the product didn't test well with certain respondents. In addition, it is possible that one specific product obstructed the predictive and explanatory capability of the general consumer innovativeness measure. Secondly, the study used fictitious companies and scenarios for measurement. Also, 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.

## Future Research

Other opportunities for future research based on this study include using a different electronic device and/or using multiple electronic devices. 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. This indicates an opportunity to examine more basic traits and different product categories that might help examine direct effects on the category-specific traits.

Based on sufficient advances in theory, evaluate alternative models involving general and product-category-specific consumer innovativeness in structural equation modeling. Adequate theoretical support should prompt the evaluation of constrained and unconstrained alternatives of the model specified in this study using more constructs. Another consideration is to examine an alliance of real companies. The evaluation of the image of actual alliances involving more than two known companies should be possible by uniting them in similar scenarios.

## References

Anderson, J. C. &Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach.*Psychological Bulletin*, *103* (3), 411-23.

Anderson, J. C. &Hakansson, H. &Johanson, J. (1994). Dyadic business relationships within a business network context.*Journal of Marketing*, *58* (October), 1-15.

Areni, C. S., Duhan, D. F. &Kieker, P. (1999). Point-of-purchase displays, product organization, and brand purchase likelihoods. *Journal of the Academy of Marketing Sciences*, *27* (4), 428-41.

Bollen, K. A. (1989).*Structural Equations with Latent Variables*, New York, NY: John Wiley, Inc.

Boulding, W. &Kirmani, A. (1993). A consumer-side experimental examination of signaling theory: do consumers perceive warranties as signals of quality?*Journal of Consumer Research*, *20* (June), 111-23.

Boulding, W. &Morgan, R., &Staelin, R. (1997) Pulling the plug to stop the new product drain. *Journal of Marketing Research*, *34* (February), 164.

Boyd, T. C. & Mason, G. H. (1999). The link between attractiveness of 'extrabrand' attributes and the adoption of innovations. *Journal of the Academy of Marketing Science*,*27* (3), 306-19.

Bucklin, L. P., & Sengupta, S. (1993). Organizing successful co-marketing alliances. *Journal of Marketing*, (April), 32-46.

Buss, A. H. (1989). Personality as traits. *American Psychologist*, *44*, 1378-88.

Chan, P. S. & Heide, D. (1993). Strategic alliances in technology: Key competitive weapon. *S.A.M. Advanced Management Journal*, *58* (4), 9-22.

Churchill, G. A., Jr. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, *16* (February), 64-73.

Cliff, N. (1983). Some cautions concerning the application of causal modeling methods. *Multivariate Behavioral Research*, *18*, 115-26.

Dodds, W. B., Monroe, K. B., & Grewal, D. (1991). Effects of price, brand and store information on buyers' product evaluation. *Journal of Marketing Research*, *28* (August), 307-319.

Das, S., Pradyot K. S., &Sengupta, S. (1998), Impact of strategic alliances on firm valuation. *Academy of Management Journal*, *41* (1), 27-41.

Das, T. K., & Teng, B. (1999). Managing risks in strategic alliances. *Academy of Management Executive*,*13* (4), 50-62.

Dickerson, M.D. & Gentry J. W. (1983). Characteristics of adopters and nonadopters of home computers. *Journal of Consumer Research*, *10* (September), 225-34.

Dowling, G. R. (1986a). Managing your corporate images. *Industrial Marketing Management*, *15* (May), 109-115.

Dowling, G. R. (1986b). Perceived risk: The concept and its measurement. *Psychology and Marketing*, *3* (Fall), 193-210.

Dowling, M. E., Keering,W. D., CarlinB. A., & Wisnieski,J. (1996). Multifaceted relationships under competition. *Journal of Management Inquiry*, *5* (2), 155-167.

Feldman, L. P.& Armstrong,G. M. (1975). Identifying buyers of a major automotive innovation. *Journal of Marketing*, *39* (January), 47-53.

Festervand, T. A., MeinertD. B., & VitellS. J.. Older adults' attitudes toward and adoption of personal computers and computer-based lifestyles assistance. *Journal of Applied Business Research*, *10* (Spring), 13-25.

Foxall, G. R. (1995). Cognitive styles of consumer initiators. *Technovation*, *15* (June), 269-88.

Gatignon, H.& Robertson, T. S. (1985). A propositional inventory for new diffusion research. *Journal of Consumer Research*, *11* (March), 849-867.

Gerbing, D. W. & Anderson, J. C. (1988) An updated paradigm for scale development incorporating unidimensionality and its assessment. *Journal of Marketing Research*, *25*, 186-92.

Goldsmith, R. E. & Hofacker,C. (1991). Measuring consumer innovativeness. *Journal of the Academy of Marketing Science*, *10* (3), 209-21.

Goldsmith, R. E. &Freiden, J. B. & Eastman J. K. (1995). The generality/specificity issue in consumer innovativeness research. *Technovation*, *15* (December), 601-612.

Hirschman, E. C. (1980). Innovativeness, novelty seeking, and consumer creativity. *Journal of Consumer Research*, *7* (December), 283-94.

Jaccard, J.& Wan,C. K. (1996), *LISREL approaches to interaction effects in multiple regression*, Sage University Paper series on Quantitative Applications in the Social Sciences, series no. 07-114, Thousand Oaks, CA: Sage.

Joreskog, K.& Sorbom D. (1996), *LISREL 8:User's reference guide*, Chicago, IL: Scientific Software International, Inc.

Kirton, M. (1976). Adaptors and innovators: A description and measure. *Journal of Applied Psychology*, *61*, 622-9.

Koh, J., & Venkatraman,N. (1991). Joint venture formations and stock reactions: An assessment in the information Technology Sector. *Academy of Management Journal*, *34* (4), 869-892.

Kotler, P. (1994), *Marketing Management*, Englewood Cliffs, NJ: Prentice Hall.

Lim, H.& Park, J. (2013) The effects of national culture and cosmopolitanism on consumers' adoption of innovation: A cross-cultural comparison. *Journal of International Consumer Marketing*,*25* (1), 16-28.

Lynn, G. S. & Akgun,A. E. (1998). Innovation strategies under uncertainty: A contingency approach for new product development. *Engineering Management Journal*, *10* (3), 11-17.

MacCullum, R. (1986). Specification searches in covariance structure modeling. *Psychological Bulletin*, *100*, 107-20.

Martineau, P. (1958). Sharper focus for the corporate image. *Harvard Business Review*, *36* (Nov./Dec.), 49-58.

Midgley, D. F. & Dowling G. R. (1978). Innovativeness: The concept and its measurement. *Journal of Consumer Research*, *4* ( March), 229-242.

Moskowitz, D. S. (1982). Coherence and cross-situational generality in personality: A new analysis of old problems. *Journal of Personality and Social Psychology*, *43* (October), 754-68.

Mowen, J. C. & Minor,M.(1998), *Consumer Behavior*, 5th ed., New Jersey: Prentiss-Hall, Inc.

Mowen, J. C. & Christia, J. & Spears,N. (1998). Consumer innovativeness: A general consumer trait or a product category specific trait? American Marketing Association Educators' Summer Conference.

Park, C. W., Jun,S., & Shocker,A. D. (1996). Composite branding alliances: An investigation of extension and feedback effects. *Journal of Marketing Research*, *33*(November), 453-466.

Rao, A. R., Qu,L. & Ruekert,R. W. (1999). Signaling unobservable product quality through a brand ally.*Journal of Marketing Research*, *36* (May), 258-268.

Rao, A. R., Qu, L. & Ruekert,R. W. (1994). Brand alliances as signals of product quality. *Sloan Management Review*, (Fall), 87-97.

Rogers, Everett (1962), *Diffusion of innovations*, Glencoe, IL: Free Press.

Rogers, Everett (1983), *Diffusion of innovations*, 3rd ed., New York: Free Press.

Robertson, T. S. & Kennedy,J. N. (1968). Prediction of consumer innovators: Application of multiple discriminant analysis. *Journal of Marketing Research*, *5* (February), 64-9.

Robertson, T. S. &Myers,J. H. (1969). Personality correlates of opinion leadership and innovative buying. *Journal of Marketing Research*, *6* (May), 164-8.

Ruekert, R. W., &Walker, O. C., Jr., (1987). Marketing's interaction with other functional units: A conceptual framework and empirical evidence. *Journal of Marketing*, *51* (January), 1-19.

Shilling, M. A. & Hill,C. W. (1998). Managing the new product development process: Strategic imperatives. *Academy of Management Executive*, *12* (3), 67-81.

Shimp, T. A. (1997).*Advertising and Promotion and Supplemental Aspects of Integrated Marketing Communications*, 5th Ed., The Dryden Press, Harcourt Inc.: Orlando, 198.

Spekman, R. E. & Sawhney,K. (1990). Toward a conceptual understanding of the antecedents of strategic alliances. *Report No. 90-114* (August). Cambridge, MA; Marketing Science Institute.

Steenkamp, J. E., ter Hofstede, F. & Wedel,M. (1999). A cross-national investigation into the individual and national cultural antecedents of consumer innovativeness. *Journal of Marketing*, *63* (April), 55-69.

Taylor, J. W. (1977). A striking characteristic of innovators. *Journal of Marketing Research*, *14* (February), 104-7.

van Rijnsoever, F. J & Carolina.C. (2011). Extending consumer categorization based on innovativeness: Intentions and technology clusters in consumer electronics. *Journal of the American Society for Information Science & Technology*, *62* (8), 1604-1613.

Venkatraman, M. P. & Price,L. L. (1990). Differentiating between cognitive and sensory innovativeness: Concepts, measurement, and implications. *Journal of Business Research*, *20* (June), 293-315.

Williamson, O (1989). Transaction cost economics. *Perspectives on Organization Design and Behavior*, 347-370, New York: Wiley.