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A role analysis of opinion leaders, adopters, and communicative adopters with a dynamically continuous innovation

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A ROLE ANALYSIS OF OPINION LEADERS, ADOPTERS, AND COMMUNICATIVE ADOPTERS WITH A DYNAMICALLY CONTINUOUS INNOVATION

A Thesis

Presented to the

Faculty of

California State University,

San Bernardino

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

in

Interdisciplinary Studies

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ABSTRACT

This research is designed to examine whether Venkatraman's (1989) communicative adopter concept is applicable to dynamically continuous innovations, in this case, Graphic User Interface (GUI) computer software. Subjects were undergraduate marketing students and were given a 64-item scale modeled after Venkatraman's (1989) 64-item scale measuring the same constructs used by Venkatraman. A cluster analysis was used to determine group membership utilizing scores on opinion leadership and adoptive behavior subscales. As in Venkatraman's (1989) research, four clusters formed: Opinion Leader, Adopter, Communicative Adopter (those scoring high in both opinion leadership and adoptive behavior), and "other" (those scoring low in both). These clusters were compared on the same diffusion of innovation constructs used by Venkatraman (1989) using analysis of variance (ANOVA). The communicative adopter group was found to be significantly different than all other groups on all constructs except homophily. The results further extend research in this area and provide support for theory development. Issues with respect to managerial implications, such as market segmentation strategies, are discussed.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE

Introduction

The process by which new products and ideas are accepted and then diffused through a society has received considerable research attention (Baumgarten, 1975; Gatignon and Robertson, 1985; Robertson, 1971; Venkatraman, 1989). This concept, called the Diffusion of Innovations, has been identified by Rogers (1983) as having two major characteristics: (1) the *innovator* or *early adopter* in the life cycle who is responsible for the initial consumption or application of a new product, and (2) the *opinion leader* who diffuses product information and usage experiences to his/her surrounding peer group culture.

The majority of past research on the relationship between adoptive behavior and opinion leadership has examined the diffusion of innovation process with regard to discontinuous product innovations. A discontinuous innovation is a new product that involves the establishment of new consumption patterns and the creation of previously unknown products (Robertson, 1971). This type of innovation typically follows the hierarchy of effects, high-involvement model. In this model, the consumer moves through a series of steps, from awareness and information gathering to preference and attitude development, then eventually to an observable behavior, such as trial of the product. This type of innovation would also require significant changes in existing attitudes and behaviors on the part of the adopter (Robertson, 1971). Examples of discontinuous innovations include computers and microwave ovens. In contrast, a

recent study by Venkatraman (1989) examined the similarities and differences of opinion leaders and adopters with a continuous innovation. This type of innovation is characterized by no new change in either product type or existing purchasing behavior, and it is usually a product that requires a low level of purchasing involvement. Continuous innovations include new fashions, new restaurants, and sparkling water.

Robertson (1971) believes that the diffusion of new innovations are not dichotomized into either a continuous or a discontinuous category. Rather, he posits that a continuum exists for classifying new product innovations by how continuous or discontinuous their effects are on established consumption patterns. Consequently, he identifies a third category of product innovation that is located between the two extremes of this continuum. This category is referred to as a ***dynamically continuous innovation*** and is described by Robertson (1971) as an innovation involving the creation of a new product or the alteration of an existing one, but without dramatically altering existing consumption patterns. Examples of this type of innovation would include the push-button telephone, electric toothbrushes, and mountain bikes.

Most of the past research has examined the Diffusion of Innovation with respect only to opinion leadership and adoptive behavior characteristics. However, a study by Venkatraman (1989) using a continuous innovation revealed that in movie-going behavior the opinion leader and adopter groups merge to form a third group, called "communicative adopters." Communicative adopters are those who scored high on both the opinion leadership and the adoptive behavior scales. And from a marketing

management perspective, this group of consumers is important to identify because they will not only be among the first to purchase a particular product category, but they will also be instrumental in diffusing product-related information and opinions to other potential consumers.

Research Goals

This study attempts to complement and extend the previous research in the area of communicative adopter theory by examining the relationships between opinion leadership and adoptive behavior for a dynamically continuous innovation. Graphic User Interface (GUI) computer software is the dynamically continuous innovation chosen for study. GUI software refers to either Microsoft Windows or Apple Macintosh software programs, but does not include traditional DOS software packages.

Specifically, the research objectives are as follows:

1. To review the consumer opinion leadership, adopter, and communicative adopter literature in relation to dynamically continuous innovations.

2. To construct the scales used in communicative adopter studies for GUI computer software and to evaluate the scale's psychometric properties, such as reliability and factorial validity.

3. To examine the relationship between opinion leadership, adopter behavior and communicative adopter behavior with regard to other constructs identified as relevant by past literature.

4. To present implications for marketing management.

CHAPTER TWO

Review of the Research and Theoretical Literature

This study enhances the developing theory underlying the communicative adopter segment. The evolving nature of this theory is examined in this literature review, which is divided into three sections: 1) opinion leadership and adoptive behavior, 2) innovative communicators, and 3) communicative adopters.

Opinion Leadership and Adoptive Behavior

The psychological characteristics that underlie the constructs of opinion leadership and adoptive behavior vary depending on the perspective from which they are being examined (Venkatraman, 1989). Following the Diffusion of Innovation perspective, opinion leadership is defined as the "degree to which an individual is able informally to influence other individuals' attitudes or overt behavior in a desired way with relative frequency" (Rogers, 1983, p. 271). Past diffusion research indicates that the characteristics of opinion leaders include interpersonal influence, interconnectedness, and homophily (Rogers, 1983; Venkatraman, 1989). Interpersonal influence refers to the degree to which a person influences other people's opinions about their attitudes and purchasing behavior for a particular product. Interconnectedness means the degree to which respondents are linked to other peer-related groups by interpersonal networks. Homophily refers to the degree to which respondents are similar to each other on certain attributes, such as socioeconomic backgrounds and career aspirations.

Concerning the construct of adoptive behavior, the diffusion perspective defines adopters as people "who are relatively early in adopting an innovation, as compared to other members of the social system" (Rogers, 1983, p. 127). Opinion leaders and adopters are similar in socioeconomic status and in seeking media sources of information. They differ in that adopters are risk seekers and change seekers, whereas opinion leaders conform more to the social system and are more interconnected than adopters (Rogers, 1983). As Venkatraman (1989) posits in her movie-going research, "opinion leaders may go to a movie because they believe someone may want their opinion on it or because it may be a topic of conversation at social gatherings. For adopters, on the other hand, the personal motives may be more important; they go to movies simply because they enjoy going to movies or because they have great interest in and knowledge about movies" (Venkatraman, 1989, p. 54).

Following the marketing perspective, opinion leaders are characterized by influence, interpersonal word-of-mouth communication, expertise, and innovative behavior (Feick and Price, 1987; Myers and Robertson, 1972). It is also believed that opinion leaders have an enduring involvement with a product class, which motivates them to seek and share information with others (Bloch and Richins, 1983; Corey, 1971; Venkatraman, 1989). Therefore, it is relevant to examine opinion leaders in terms of enduring involvement, influence, expertise, and information sharing.

With regard to adopters, consumer behavior literature indicates that they seem to be more innovative than others in their peer group, and they adopt a new innovation

more quickly than others to the extent they possess certain situational and consumer characteristics such as a consumer's enduring involvement with the product, the extent of product class use and the socioeconomic status of the consumer (Venkatraman, 1989). Adopters seem to be more enduringly involved with, seek more mass media information about, and more heavily consume a product class than nonadopters, (Bloch, Sherrell, and Ridgway, 1986; Midgley, 1978; Taylor, 1977). Nonadopters are those who diffuse innovations differently than adopters, including opinion leaders. Thus, it is important to compare opinion leaders and adopters in terms of influence, expertise, information sharing, information seeking, frequency of using a particular product, and enduring involvement in the use of a particular product. These comparisons, consequently, will allow the similarities between the two groups to be identified.

Innovative Communicators

Although the traditional marketing perspective on the diffusion of innovations held that only two groups, opinion leaders and adopters, were responsible for the diffusion of new products (Myers and Robertson, 1972; Taylor, 1977), research by Baumgarten (1975) and Venkatraman (1989) show that a unique third group exists who are high in both opinion leadership and adoptive behavior. This group is particularly relevant to marketers because they typically diffuse new products more quickly and are usually more easily identified (Venkatraman 1989). In making the comparisons between opinion leaders and adopters, Baumgarten (1975) divided his sample into those

who were high, medium, or low on opinion leadership and on adoptive behavior. Those who scored high on opinion leadership and high on adoptive behavior were termed "innovative communicators." Those scoring high on the opinion leadership scale and adopter behavior scale were termed opinion leaders and adopters, respectively, and all the other respondents were classified as "others" (not high on either scale). He found a difference between the "innovative communicators" and the "others" groups on demographics, social activities, mass media exposure, and psychological and sociopolitical attitude factors.

However, additional findings on the innovative communicator segment were inconsistent. Hirschman and Adcock (1977) extended Baumgarten's research by examining the differences among "innovative communicators," opinion leaders, adopters, and "others." They found few meaningful differences between these groups on variables that included demographic, sociographic, and media usage characteristics.

Communicative Adopters

Venkatraman (1989), based on Baumgarten's (1975) and Hirschman's et al. (1977) work, conducted a cluster analysis of 317 student movie goers that revealed four clusters: opinion leaders (those scoring high on the opinion leadership scale), adopters (those scoring high on the adopter scale), communicative adopters (those scoring high on both opinion leadership and on adoptive behavior scales), and others. Venkatraman (1989) used the term "communicative adopters" which Baumgarten (1975) called "innovative communicators" because she believed that it was the adoption status, not

the innovativeness of individuals that was being measured. She then examined the difference between these clusters. Based on the diffusion literature, the differences were explained in terms of homophily, interconnectedness, and motives for seeing movies. And with regard to the consumer behavior literature the differences were defined in terms of enduring involvement, influence, expertise, and information sharing. Smith and Timpany (1991), in a replication of Venkatraman's (1989) study, also found evidence of the communicative adopter group with regard to movie-going behavior. Also, a working paper by Smith and Timpany (1994) examined personal computer behavior, a discontinuous innovation. Using an adapted version of the scale used by Venkatraman (1989), they also identified the communicative adopter group: those who scored high on both opinion leadership and adoptive behavior. Subsequently, similar results were found when comparing the adopter, opinion leader, and communicative adopter groups with regard to other relevant diffusion constructs.

However, the majority of the past communicative adopter research has been conducted using either continuous or discontinuous innovations. That is, no marketing study has compared opinion leaders, adopters, and communicative adopter segments using a dynamically continuous innovation product category. The research question which follows is, therefore, whether the same groups found in the Venkatraman (1989) study can also be identified when using a dynamically continuous product category.

Hypotheses

This study examined the following hypotheses:

H_1: It was hypothesized that the opinion leader and the adopter groups would merge to form the communicative adopter group using GUI computer software, a dynamically continuous innovation, as the product category.

H_2: It was hypothesized that the communicative adopter group would have significantly greater enduring involvement, influence, expertise, on-going information seeking, information sharing, and frequency of product usage than the adopter, opinion leader, or "other" groups.

CHAPTER THREE

Methodology

The purpose of this chapter is to describe the design used to carry out the research objectives. Five sections comprise this chapter, each developing a dimension of the method used to conduct this study. The sections are: 1) Design, 2) Sample, 3) Selection of the Product Category, 4) Justification of the Product's Innovation Type, 5) Measures, and 6) Procedure.

Design

Because this study was a replication and extension, it utilized the survey research design developed by Venkatraman (1989). A cluster analysis was performed using scores on the opinion leadership and adoptive behavior scales, and the independent variable was the diffusion of innovation condition formed by the cluster analysis. The four expected conditions were: opinion leader, adopter, communicative adopter, and other. The dependent measures were the scores on each of the construct subscales: enduring involvement, influence, expertise, information sharing, on-going information seeking, frequency of GUI software use, personal motives for using GUI software, social motives for using GUI computer software, interconnectedness, and homophily. Group comparisons were made for each of the diffusion of innovation conditions (opinion leader, adopter, communicative adopter, and other) across each of the constructs.

Sample

The subjects in previous communicative adopter research were university students. Therefore, the subjects for the present study were 332 students from the California State University, San Bernardino campus, and between the ages of 18-50 years. Students in undergraduate marketing classes were given an opportunity to participate in the study. A sample size between 300 - 400 was sought. This number of subjects not only approximates the Venkatraman (1989) study, which consisted of 329 subjects, but also exceeded the recommended number of subjects needed to attain a power level of .80 with a "medium" effect size (Cohen, 1977). That is, a sample size of 260 or more will present an 80 percent probability that the communicative adopter group, if it does exist, will be found with a medium effect size.

Selection of the Product Category

Robertson (1971) describes three types of innovations: continuous, dynamically continuous, and discontinuous. The major factor determining under which type of innovation group a particular product category would fall is to what extent established consumption patterns are altered. Specifically, continuous innovations cause little or no disruption of existing behavioral patterns and usually involve the modification of an existing product. Discontinuous innovations, on the other hand, require the establishment of new consumption patterns as well as a new product. Dynamically continuous innovations, then, are products that cause some disruption in existing

behavioral patterns, but may either be a new product or a modification to an existing one.

Computer software as a product category is, of course, not a new product. GUI software, though, is a modification to the traditional DOS-based software. And the introduction of GUI computer software (Apple Macintosh software and Windows software for DOS-based systems) most certainly did lead to a significant change in existing patterns of personal computing behavior. Thus, Graphic User Interface computer software meets the criteria of a dynamically continuous innovation.

Justification of the Product's Innovation Type

Robertson (1971) expanded the traditional dichotomous perspective of innovations. He described new innovations on a theoretical continuum from continuous to discontinuous innovations, with dynamically continuous innovations comprising the area in the middle of the continuum. Before the inception of this continuum, product categories that were neither continuous nor discontinuous innovations were theoretically unaccounted for. Hence, the addition of the dynamically continuous innovation to the diffusion model allows any product category to be placed on the continuum, based on its innovation characteristics.

This study used a product category that intuitively fit into the theoretical definition of a dynamically continuous innovation. However, in order to give objective confirmation as to the dynamically continuous status of the chosen product category (GUI computer software), a 12-item scale was constructed (Appendix A). Rogers

(1961) described five characteristics of innovations: relative advantage, compatibility, complexity, trialability, and observability. Fliegel and Kivlin (1966) expanded this list to include factors such as financial cost, social cost, and perceived risk associated with the use of the product. Additional factors regarding understandability, required behavioral change, ease of use, and pre-purchase information seeking were added to the scale.

The scale was administered to 37 undergraduate marketing students, and each respondent was asked to judge 6 product categories, including GUI computer software, on each of the 12 innovation factors. A 5-point Likert scale format was used. The mean scores for each product category and the reliability estimate of the scale can be found in Table 1.

TABLE 1
INNOVATION QUESTIONNAIRE MEAN SCORES FOR SIX PRODUCT CATEGORIES (n=37)

INNOVATION	MEAN SCORE
Toothpaste	1.97
Movies	2.38
Restaurants	2.55
Fashions	2.59
Graphic User Interface Software	3.89
Personal Computers	3.94
ALPHA COEFFICIENT .88	

The means of each of the product categories in Table 1 create a rank order in terms of innovation type, where the products with the lower means are more continuous and the products with higher means are more discontinuous. The rank order

established by this scale indicates in similarity to previous descriptions of these products (except GUI computer software) in diffusion research (Venkatraman, 1989; Smith and Timpany, 1994). Specifically, toothpaste, movies, restaurants, and fashions comprise product categories at the continuous end of the theoretical continuum, and these categories become more and more discontinuous in the order listed. Conversely, personal computers have been identified as a discontinuous product (Smith and Timpany, 1994). The results of this scale places GUI computer software as less continuous than personal computers but more discontinuous as new fashions. The proximity of the GUI software category to the personal computer category is expected because both are computer products. The position of GUI computer software on the theoretical continuum relative to the other products tested, therefore, gives additional evidence that GUI computer software is a dynamically continuous product category.

Measures

Childers' (1986) version of the King and Summers (1970) scale was used to measure opinion leadership due to its established convergent and discriminant validity properties (Yavas and Riecken, 1982; Childers, 1986). The remainder of the survey utilized the same items and constructs as those used in Venkatraman's (1989) study of movie-going behavior. These scales have demonstrated strong reliability coefficients and have been shown to have evidence of factorial validity (Smith and Timpany, 1994). However, due to the nature of differences between movies and graphic user interface

computer software, items will be reworked to fit GUI computer software usage behavior.

The survey consisted of 10 constructs and are defined in Table 2. Most of these

TABLE 2
DEFINITIONS AND CITATIONS FOR THE SUBSCALE CONSTRUCTS USED IN THE STUDY

CONSTRUCT	# OF ITEMS	DEFINED	CITATION
Opinion Leadership	7	One who diffuses product information and usage experiences to his/her surrounding peer group culture.	Childers' (1986) version of the King and Summers (1970) scale
Adoptive behavior	4	One who is responsible for the initial consumption or application of a new product.	Midgley and Dowling (1978)
Enduring involvement	10	On-going concern with a product class.	Bloch and Richins (1983), Richins and Bloch (1986)
Influence	7	the degree to which the respondents influence other people's opinions about GUI computer software and their choice of GUI software.	Venkatraman (1989)
Expertise	4	subjective prior knowledge or perception of their knowledge about GUI computer software.	Brucks (1985)
On-Going Information Seeking	4	Search activities that occur on a continuous basis and are independent of specific purchase needs.	Block, Sherrell, and Ridgway (1986)
Information Sharing	8	The extent to which respondents talk to friends about GUI computer software, discuss and listen to other people's opinions and share their opinions with others.	Venkatraman (1989)
Frequency	1	Frequency of using GUI computer software	Venkatraman (1989)
Personal motives for using GUI computer software	5	The importance of motives as using GUI computer software because one enjoys them or because of a great interest in them.	Venkatraman (1989)
Social motives for using GUI computer software	2	The extent to which respondents are involved in or use GUI computer software because they believe someone may want their opinion on GUI computer software or because it may be a topic of conversation at social gatherings.	Venkatraman (1989)
Interconnectedness	4	The degree to which respondents are linked to other students by interpersonal networks.	Venkatraman (1989)
Homophily	7	The degree to which respondents are similar to other students on certain attributes such as socioeconomic backgrounds and career aspirations.	Venkatraman (1989)

constructs used a 5-point, Likert-type scale, and the survey consisted of 64 items (Appendix B). A series of demographic items was included at the end of the survey. The item stems and their respective scales are listed by construct and can be found in Appendix C.

Procedure

The participants received a survey and an accompanying informed consent form. The respondents were allowed to complete the survey during class, and the surveys were collected at that time. The respondents were asked to fill out the questionnaires carefully or to not do so at all. The questionnaires were subsequently checked for nonsense answers, data falsification, and systematic responses, and the questionnaires containing suspect data were deleted from the study.

CHAPTER FOUR

Pretest Analysis

Scale Reliability and Validity

Factorial validity was estimated for the opinion leadership and adoptive behavior scales by using factor analysis. It was determined that factorial validity was necessary for these constructs because of their importance in the determination of the diffusion segments formed by the cluster analysis. Also, as in Venkatraman's (1989) study, reliability analysis using Cronbach's alpha was calculated for this study on each of the multi-item construct scales.

Identification of Clusters

The number of naturally occurring clusters in the sample was determined using the Calinski and Harabasz index (Milligan and Cooper, 1985) calculated for a number of clustering solutions that was identified using the SPSS clustering algorithm with Ward's clustering method and Squared Euclidean distance measure. The cluster solution with the highest index was the best fit to the data. These clusters were subsequently used for group comparisons in the primary hypothesis, which was to investigate whether the communicator adopter group will have significantly different enduring involvement, influence, expertise, on-going information seeking, information sharing, frequency of product usage, personal motives, and social motives than either the adopter, opinion leader, or "other" groups. These comparisons were tested using analysis of variance (ANOVA).

Scale Construction and Pretesting

The 64-item scale was based on the 65-item survey measuring the same constructs as those measured by Venkatraman (1989). The pilot test subjects were 54 undergraduate university marketing students.

Factorial Validity

Although an analysis of factorial validity was not offered in the Venkatraman (1989) study, Smith and Timpany (1994), using the Venkatraman (1989) scale modified for personal computer behavior, found evidence of factorial validity. A factor analysis was performed on the opinion leadership and adoptive behavior subscales for the pretest data. A summary of the factor analysis can be seen in Table 3.

TABLE 3
FACTOR ANALYSIS OF THE OPINION LEADERSHIP AND ADOPTIVE BEHAVIOR SUBSCALES USING OBLIQUE ROTATION (Pretest Data, n=54)

				FACTOR LOADINGS	
CONSTRUCT	**ITEM #**	**MEAN**	**S.D.**	**I**	**II**
Opinion Leadership	1	2.85	1.23	.83	-.07
	2	2.38	1.22	.81	.07
	3	2.43	1.43	.74	.15
	4	2.72	1.31	.32	.22
	5	2.74	1.60	.68	-.02
	6	2.66	1.57	.67	.11
	7	3.04	1.39	.71	-.06
Adoptive Behavior	8	2.08	1.30	-.12	.97
	9	2.30	1.22	.02	.73
	10	2.17	1.31	.19	.71
	11	3.34	1.54	.13	.01
Eigenvalues				**5.12**	**.83**
% Variance Explained				**46.5**	**7.6**

As can be seen on Table 3, the scale for opinion leadership formed a unidimensional factor. That is, all of the items for opinion leadership loaded strongly on Factor I. The items in the adoptive behavior scale, however, did not seem to form a single factor. Specifically, item #11 did not load strongly on either factor and appeared to load on a third, unidentified dimension. Some question existed, then, as to the factorial validity of the adoptive behavior scale when using item #11, suggesting that item #11 possibly should not be use in the analysis.

Reliability

Cronbach's alpha analyses were performed for each of the subscales, and comparisons to Venkatraman (1989) can be found in Table 4.

TABLE 4
CONSTRUCTS, NUMBER OF ITEMS, AND ALPHA COEFFICIENTS (PRETEST, n=54)

	# of Items		Coefficient Alpha	
Construct	**This Study**	**Venkatraman**	**This Study**	**Venkatraman**
		GROUPS		
Opinion Leadership	7	7	0.88	0.77
Adoptive Behavior	4	4	0.67	0.71
Adoptive Behavior (#11 deleted)	3	4	0.85	0.71
		OPINION LEADER AND ADOPTER CHARACTERISTICS		
Enduring Involvement	10	10	0.93	0.80
Influence	7	6	0.91	0.76
Expertise	4	5	0.81	0.76
On-Going Information Seeking	4	4	0.88	0.70
Information Sharing	8	8	0.89	0.71
Frequency of GUI Software Use	1	1	--	--
		MOTIVES FOR USING GUI COMPUTER SOFTWARE		
Personal	5	5	0.80	0.66
Social	2	2	0.88	0.69
		INDICATOR OF NETWORK BEHAVIOR		
Homophily	7	7	0.83	0.74

As can be seen in Table 4, the alpha coefficients from the pilot test are strong, and in most of the subscales they are larger than in the Venkatraman (1989) study. As a result, these strong alpha coefficients give evidence of a reliable scale. It should be noted, though, that in the 4-item adoptive behavior scale, the alpha coefficient could be increased from 0.67 to 0.85 with the deletion of item #11. This, along with its inability to contribute to scale's factorial validity, gave convincing support to the possible inappropriateness of item #11. An additional reliability analysis (Table 4) was

performed on the adoptive behavior scale with item #11 removed, and the increase in the reliability coefficient appeared to be substantial. Although item #11 was included in the survey, it was anticipated that it would not be used in the final analysis of the results.

CHAPTER FIVE

Results

Prior to the analysis, the following eleven subscales were examined through various SPSS for Windows programs for accuracy of data entry, missing values, and fit between their distributions and the assumptions for the analyses: opinion leadership, adoptive behavior, enduring involvement, influence, expertise, on-going information seeking, information sharing, frequency of using GUI computer software, personal motives, social motives, and homophily. Twenty-one cases were determined to contain systematic responses and were removed from the analysis. Cases #65, 167, 233, 257, 272, 300, and 321 had a missing value on one of the individual items composing either the opinion leadership or adoptive behavior scales, which were to be used as the clustering variables. It was determined that this missing data was random, and mean replacement for the values was used. In addition, non-systematic missing responses for enduring involvement, influence, expertise, on-going information seeking, information sharing, and frequency of product usage was observed and were estimated using mean replacement.

In the homophily subscale, items #58 through #64 contained 18, 19, 17, 19, 20, 20, and 19 missing values, respectively. It was believed that the nature of these items were of a somewhat more personal nature than most other items in the survey. Based on this assumption, the missing data associated with the homophily subscale was thought to be systematic. Estimation of the missing values through regression was

attempted, but a significant prediction of homophily scores could not be obtained from any combination of the other variables. Therefore, mean replacement was used.

Significant positive skewness was revealed in opinion leadership (z=4.88, p<.01) and significant negative skewness was shown in information sharing (z=-3.43, p<.01), personal motives (z=-3.71, p<.01), and homophily (z=-3.72, p<.01). It was decided not to correct for this skewness because it is believed that the skewness is a representation of a true nonnormal distribution of these constructs in the population rather than measurement error inherent in the survey.

Factorial Validity

A factor analysis was performed on each of the subscales for the data set. A summary of the factor analysis can be seen in Table 5. The results of the factor

TABLE 5
FACTOR ANALYSIS OF THE OPINION LEADERSHIP AND ADOPTIVE BEHAVIOR SUBSCALES USING OBLIQUE ROTATION (n=332)

				FACTOR LOADINGS	
CONSTRUCT	**ITEM #**	**MEAN**	**S.D.**	**I**	**II**
Opinion Leadership	1	2.32	1.15	.85	.05
	2	2.11	1.12	.78	-.07
	3	1.92	1.17	.78	-.05
	4	2.24	1.19	.69	-.07
	5	2.53	1.41	.32	.01
	6	2.26	1.21	.68	.05
	7	2.66	1.27	.56	.01
Adoptive Behavior	8	2.45	1.05	-.07	.85
	9	2.45	1.12	.15	.76
	10	2.26	1.09	.01	.89
Eigenvalues				**4.48**	**1.04**
% Variance Explained				**44.8**	**10.4**

analysis shown in Table 5 indicate only slight differences from the factor analysis of the

pretest data. Again, it was determined that item #11 was loading on a factor other than those representing opinion leadership or adoptive. The loading for item #11 on Factor I and Factor II was -.11 and .19, respectively. Further confirmation as to the deficiency of item #11 was given when comparing the percentage of variance explained by the two factors. The total variance explained by the two factors when #11 was included was 51%, whereas the two factors explained 55% when item #11 was omitted (Table 5).

Reliability

Cronbach's alpha statistics were calculated to estimate the reliability of each of the multi-item scales used in this study (Table 6). As in the pretest data, item #11

TABLE 6
CONSTRUCTS, NUMBER OF ITEMS, AND ALPHA COEFFICIENTS (n=332)

	Number of Items		Coefficient Alpha	
Construct	**This Study**	**Venkatraman**	**This Study**	**Venkatraman**
		GROUPS		
Opinion Leadership	7	7	0.83	0.77
Adoptive Behavior	3	4	0.88	0.71
		OPINION LEADER AND ADOPTER CHARACTERISTICS		
Enduring Involvement	10	10	0.92	0.80
Influence	7	6	0.90	0.76
Expertise	4	5	0.86	0.76
On-Going Information Seeking	4	4	0.89	0.70
Information Sharing	8	8	0.91	0.71
Frequency of GUI Software Use	1	1	--	--
		MOTIVES FOR USING GUI COMPUTER SOFTWARE		
Personal	5	5	0.81	0.66
Social	2	2	0.77	0.69
		INDICATOR OF NETWORK BEHAVIOR		
Homophily	7	7	0.82	0.74

diminished the reliability coefficient of the adoptive behavior scale. With the removal of this item the coefficient improved from .54 to .88. As a result, it was decided to not include item #11 in the analysis of the study. The remaining alpha coefficients, which ranged from .77 to .92, gave evidence of strong reliability for the other subscales.

Identification of Clusters

The correlation between the opinion leadership and the adoptive behavior scales is .52 in this study and .30 in Venkatraman's study. Both are consistent with previous research (Myers and Robertson, 1972; Robertson and Myers, 1969). The number of clusters used in this study was determined by past opinion leadership research by Venkatraman (1989), which used the Calinski and Harabasz index (Milligan and Cooper, 1985) to identify the number of naturally occurring clusters within her sample. The solution with the highest index in the Venkatraman study (1989) was four clusters.

For this study, SPSS for Windows was used to divide the data into four clusters, using the Ward's clustering method and Squared Euclidean distance measure. It was hypothesized that the opinion leadership and the adoptive behavior groups would merge as a result of the cluster analysis procedure to form the communicative adopter group. The mean opinion leadership and adoptive behavior scores for all four groups can be found in Table 7. As can be seen from the table, the formation of the communicative adopter group did occur as hypothesized. That is, the mean communicative adopter scores are the highest scores of all four groups in each of the two clustering subscales.

The communicative adopter scores for the opinion leadership and adoptive behavior scales were 4.07 and 3.80, respectively.

TABLE 7
CLUSTER MEANS OF THE FOUR GROUPS (n=332)

	GUI COMPUTER SOFTWARE			MOVIE GOING		
GROUP	***n***	**Opinion Leadership**	**Adoptive Behavior**	***n***	**Opinion Leadership**	**Adoptive Behavior**
Communicative Adopters	39	4.07	3.80	71	4.09	3.66
Opinion Leaders	69	2.98	2.85	84	3.76	2.04
Adopters	119	2.11	2.22	129	3.08	2.83
Others	108	1.33	1.80	33	2.32	1.95

The other three groups formed in a manner that was also consistent with the Venkatraman (1989) study. Next to the communicative adopter group, the second highest opinion leader score was assigned to the opinion leader group, and the second highest adoptive behavior score was given to the adopter group. The opinion leader cluster had mean scores of 2.98 on the opinion leadership scale and 2.85 on the adoptive behavior scale. The adopter group had scores of 2.11 and 2.22 on the opinion leadership and adoptive behavior scales, respectively. And lastly, the cluster with the lowest scores on both scales were termed, "others."

Differences Among Groups

It was hypothesized that significant differences would exist between communicative adopters and opinion leaders, adopters, and "others," with regard to enduring involvement, influence, expertise, on-going information seeking, information sharing, frequency of using GUI computer software, personal motives, and social

motives. For each of these dependent variables, a separate one way analysis of variance with Scheffé post hoc comparisons was used to test the four cluster means for differences. The results of the analyses of variances and the post hoc comparisons can be found in Table 8.

As hypothesized, Scheffé post hoc comparisons of the analyses of variances revealed significant differences between the communicative adopter group and the opinion leader, adopter, and "other" groups on enduring involvement, influence, expertise, on-going information seeking, information sharing, personal motives, and social motives. The strength of the effect sizes (ω^2) for the ANOVAs should also be noted. According to Kirk (1995), an ω^2 statistic of at least .138 indicates a strong effect size. As can be seen in Table 8, the ω^2 values range from .36 to .59, which far exceed Kirk's recommended cut point for a strong effect size. Group differences with regard to homophily, however, were not significant, $F(3,328)=.22$, $p<.87$.

Communicative adopters seem to be more interconnected than any of the other groups. Of the communicative adopters, 41.6% of them attended more than 15 social functions within the last year, compared to 29.8% of adopters, 20.6% of opinion leaders, and 19.8% of the "others" ($\chi^2=8.67$). Communicative adopters also seemed to be more involved with fraternities and sororities. Of the communicative adopters, 27.8% of them belonged to a fraternity or sorority, whereas 13.6%, 13.2%, and 5.7% of the adopters, opinion leaders, and "others," respectively, were members of one of

these organizations ($\chi^2 = 12.37$). And lastly, 77.8% of the communicative adopters belonged to organizations other than a fraternity or sorority. For adopters, 50.4% were members or other organizations. And 48.5% of opinion leaders and 36.8% of "others" belonged to other organizations ($\chi^2 = 18.34$).

TABLE 8
ANALYSIS OF VARIANCE AND POST HOC COMPARISONS OF THE FOUR DIFFUSION SEGMENTS ON KEY OPINION LEADER AND ADOPTER CHARACTERISTICS (n=332)

CHARACTERISTIC	Comm. Adopters Mean (sd)	Opinion Leaders Mean (sd)	Adopters Mean (sd)	Others Mean (sd)	F-Value* [ω^2]	Significant Scheffé Post Hocs
	(1)	(2)	(3)	(4)		
Enduring Involvement	3.88 (.55)	3.01 (.49)	2.35 (.62)	1.88 (.66)	121.40 [.59]	1:2,3,4 2:3,4 3:4
Influence	3.88 (.44)	3.08 (.54)	2.44 (.64)	1.94 (.72)	105.21 [.55]	1:2,3,4 2:3,4 3:4
Expertise	3.72 (.63)	2.79 (.68)	2.21 (.65)	1.72 (.77)	87.53 [.51]	1:2,3,4 2:3,4 3:4
On-Going Information Seeking	3.88 (.62)	2.84 (.78)	2.29 (.69)	1.87 (.74)	73.24 [.46]	1:2,3,4 2:3,4 3:4
Information Sharing	3.70 (.48)	3.34 (.56)	2.86 (.75)	2.26 (.85)	50.00 [.36]	1:3,4 2:3,4 3:4
GUI Use Frequency (Days per week)	5.72 (1.77)	3.66 (1.71)	2.23 (1.78)	1.11 (1.32)	86.01 [.50]	1:2,3,4 2:3,4 3:4
Personal	4.17 (.46)	3.54 (.46)	3.17 (.61)	2.71 (.70)	63.10 [.42]	1:2,3,4 2:3,4 3:4
Social	4.00 (.56)	3.31 (.56)	2.78 (.65)	2.19 (.85)	74.88 [.47]	1:2,3,4 2:3,4 3:4

*All F statistics are significant at $p < .0001$.

CHAPTER SIX

Discussion

It was hypothesized that the opinion leader and adopter groups would merge to form the communicative adopter group and that this segment would have significantly different scores on key opinion leadership and adoptive behavior characteristics. The results of the cluster analysis support this hypothesis in that the communicative adopter group was identified as those having the highest opinion leadership and adoptive behavior scores, and these findings are consistent with past research (Venkatraman 1989; Smith and Timpany 1994). Additional support for the hypothesis is given because the communicative adopter segment had higher enduring involvement and influence with GUI computer software than did the other segments. The communicative adopter segment also sought and shared information and acquired greater expertise about GUI computer software than did the other groups.

This superiority of the communicative adopter segment relative to other groups can be identified in diffusion of innovations terms in that this segment is more interconnected and more influential to others about GUI software behavior than are opinion leaders and adopters. Communicative adopters also tend to use more GUI computer software and are more motivated (for both social and personal reasons) to use GUI software than the other segments. Also, they tend to be more interconnected with their peers than do the other segments. Therefore, not only do communicative adopters use GUI software more frequently than others, but they also influence other people

through interpersonal communication. Consistent Venkatraman's (1989) research, the communicative adopter segment can be called "Change Agents."

Communicative Adopter Theory

The present study extends communicative adopter theory in that it serves to explore diffusion behavior by suggesting a unique innovation type not previously considered in past diffusion research. The innovation type, a dynamically continuous innovation, was represented by the GUI computer software product category. The dynamically continuous innovation is relevant to explore in terms of communicative adopter theory because past research has considered only continuous and discontinuous innovations. Previous innovation models have treated the type of innovation as a dichotomous continuum, where as continuous innovations occupied one end of the continuum and discontinuous innovations were located at the other end. This study, therefore, gives evidence for a more complete diffusion of innovation model, which places the dynamically continuous innovation segment on the continuum between the two other innovation types. However, additional research is needed to add strength to the theory. Alternative product categories representing each of the innovation types should be tested to determine whether the presence of the communicative adopter segment is stable across other products and industries.

Managerial Implications

Each of the three segments, opinion leaders, adopters, and communicative adopters is important to marketers of new GUI computer software, but this research

suggests that the best prospects in terms of marketing efforts are the communicative adopters. In the merging of the adopter and opinion leadership groups, the communicative adopters are identified as a segment of consumers that not only are sought for information about GUI computer software, but are among the first to try new GUI software. Therefore, communicative adopters may be perceived to be generally more influential in the overall diffusion process of new GUI computer software, and, therefore, may prove to be the most beneficial segment for which to direct advertising and promotional funds. Hence, communicative adopters may be the best prospects when a distributor is interested in targeting a segment that continuously seeks GUI software information, shares this information with other people, and influences other peoples' GUI software consumption behavior.

The thorough understanding of this unique marketing segment should be the aim of companies who wish to have their products or services rapidly diffused throughout their target market. One of the ways to maximize our understanding of communicative adopters is to identify this segment's media usage habits. Given the communicative adopter's prolific information-gathering behavior, efforts understand the nature of this behavior in terms of their preferred media vehicles followed by an appropriate promotional strategy should prove beneficial. In addition, information about communicative adopters concerning attitudes, interests, and opinions as well as psychographic data should help marketers focus their resources in the most effective

mediums. Also, knowledge of frequency of product use, social interconnectedness, and values and life-style characteristics should also be considered.

APPENDIX A

Innovations Questionnaire

Directions: Please rate the products listed below with regard to the following statements.

1. These new products/services usually possess an advantage over previous ones.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

2. These new products/services can usually be tried without much risk.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

3. Trying these new products/services usually involves learning a lot of new information.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5

or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

4. Trying these new products/services does not conflict with my current beliefs and values about them.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

5. My friends are usually aware that I have bought one of these products/services.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

6. These products/services involve monetary risk.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5

New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

7. Using these new products/services requires me to change my behavior (for example, time spent using the product/service).

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

8. These new products/services are easy to understand.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

9. These new products are easy to use.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

10. These new products/services are complex.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

11. These new products/services involve a lot of prepurchase information search.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

12. These new products/services involve functional risks.

	Strongly Disagree				Strongly Agree
New Brand of Toothpaste	1	2	3	4	5
New Movies	1	2	3	4	5
New Windows Computer Software	1	2	3	4	5
or new Macintosh Software	1	2	3	4	5
New Restaurants	1	2	3	4	5
New Personal Computers	1	2	3	4	5
New Clothing Fashions	1	2	3	4	5

APPENDIX B

GUI Computer Software Questionnaire

The following questionnaire is designed to assess your opinions in a variety of situations concerning Graphic User Interface (GUI) computer software. GUI software refers to either Microsoft Windows or Apple Macintosh software programs. Please note, however, that opinions about standard DOS software packages are not relevant to this questionnaire. Please answer to the best of your ability. All information will be held in the strictest confidence. Thank you for your time and cooperation.

Please rate yourself on the following scales relating to your interactions with friends and neighbors regarding ***Graphic User Interface (GUI) computer software*** (Microsoft Windows or Apple Macintosh software programs).

1. In general, do you talk to your friends and neighbors about GUI computer software.

very often				never
5	4	3	2	1

2. When you talk to your friends and neighbors about GUI computer software do you:

give a great deal of information				give very little information
5	4	3	2	1

3. During the past six months, how many people have you told about a new GUI software package?

told a number of people				told no one
5	4	3	2	1

4. Compared with you circle of friends, how likely are you to be asked about GUI computer software?

very likely to be asked				not at all likely to be asked
5	4	3	2	1

5. In a discussion of GUI computer software, would you be most likely to:

listen to your friends' ideas				convince your friends of your ideas
5	4	3	2	1

6. In discussions of GUI computer software, which of the following happens most often?

you tell your friends about GUI software				your friends tell you about GUI computer software
5	4	3	2	1

7. *Overall* in all of your discussions with friends and neighbors are you:

often used as a source of advice				not used as a source of advice
5	4	3	2	1

8. I often try to find out about new GUI computer software before they are officially released.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

9. I often read literature concerning GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

10. I often try to find out about new GUI computer software within the first month they are released.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

11. I usually wait to obtain new GUI computer software until it has been out for several months.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

12. If I do not use GUI computer software at least once a week, I feel I have missed something.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

13. With all of my schoolwork, the use of GUI computer software is *not* high on my list of priorities.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

14. GUI computer software programs are more than mere software to me. They are like a hobby.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

15. Using GUI computer software is a regular part of my schedule.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

16. I will often use GUI computer software more than once during the day.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

17. I take a close interest in the technical aspects of GUI computer software (programmability, debugging, compatibility with other applications, etc.).

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

18. I can almost always find time to use GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

19. I consider myself a GUI computer software buff.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

20. I often think of using GUI computer software as a treat to myself.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

21. I follow the development of new GUI computer software for the marketplace.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

22. I am usually the one in my group who suggests using GUI computer software to accomplish a task.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

23. I will often steer friends away from GUI computer software I do not like.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

24. I often persuade friends to use the GUI computer software that I like.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

25. My friends often ask me to recommend which GUI computer software they should use.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

26. Friends seek information from me regarding the latest trends in GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

27. Friends ask me about GUI computer software that I have used.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

28. I am able to recommend a GUI computer software retailer to those interested in buying software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

29. I usually know what the major GUI computer software manufacturers (Microsoft, WordPerfect, etc.)
are working on.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

30. Among my circle of friends, I am one of the "experts" on GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

31. I often know quite a bit about GUI computer software before it is released on the market.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

32. I feel confident recommending GUI computer software to my friends.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

33. I browse through computer software or related magazines almost every week.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

34. I pay attention to ads for GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

35. I pay attention to print ads (newspaper & magazines) for GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

36. I listen to ads for GUI computer software retailers when they come on my favorite radio station.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

37. I regularly ask friends about GUI computer software programs before I try them.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

38. I usually talk to friends about GUI computer software programs before I try them.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

39. My friends and I often discuss what GUI computer software programs are worth using.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

40. I often compare my opinion of GUI computer software with others.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

41. I often discuss and listen to other's opinions about GUI computer software I have recently used.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

42. I often talk about GUI computer software at parties and other social situations.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

43. I usually rely on friends' recommendations of GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

44. Usually before considering a GUI computer software program, I will ask my friends their opinion of it.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

45. On average, how many days per week do you use GUI computer software?

__ 0	__ 2	__ 4	__ 6
__ 1	__ 3	__ 5	__ 7

46. I enjoy using GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

47. I like to use GUI computer software programs that make me think.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

48. I like to use GUI computer software programs that are fun and easy to work with.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

49. I like to use GUI computer software programs that are sophisticated.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

50. Using GUI computer software is one of my favorite activities.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

51. I like to talk to friends about GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

52. I like it when people tell me they have enjoyed GUI computer software that I have recommended.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

53. How long have you been using GUI computer software?

__Less than 6 months __12-18 months
__More than 24 months __6-11 months
__19-24 months

54. Please estimate the number of people you consider to be in your group of closest friends.

__0-5 __11-15 __21-25
__6-10 __16-20 __Over 26

55. How many parties and other social functions did you attend last year?

__0-5 __11-15 __21-25
__6-10 __16-20 __Over 26

56. Do you belong to a social fraternity or sorority?

__YES __NO

57. Do you belong to any other organizations (social, political, religious, etc.)?

__YES __NO

58. How similar are you to most students with whom you come in contact at CSUSB in terms of:

	Very Similar	Similar	Neutral	Dissimilar	Very Dissimilar
Career Aspirations	5	4	3	2	1
Types of Friends	5	4	3	2	1
Type of Family	5	4	3	2	1
Social Class	5	4	3	2	1
Income	5	4	3	2	1
Spending Money	5	4	3	2	1
Leisure Activities	5	4	3	2	1

APPENDIX C

Constructs Within the GUI Computer Software Questionnaire

Opinion Leadership:

1. In general, do you talk to your friends and neighbors about GUI computer software.

very often				never
5	4	3	2	1

2. When you talk to your friends and neighbors about GUI computer software do you:

give a great deal of information				give very little information
5	4	3	2	1

3. During the past six months, how many people have you told about a new GUI software package?

told a number of people				told no one
5	4	3	2	1

4. Compared with you circle of friends, how likely are you to be asked about GUI computer software?

very likely to be asked				not at all likely to be asked
5	4	3	2	1

5. In a discussion of GUI computer software, would you be most likely to:

listen to your friends' ideas				convince your friends of your ideas
5	4	3	2	1

6. In discussions of GUI computer software, which of the following happens most often?

you tell your friends about GUI software	your friends tell you about GUI computer software

5	4	3	2	1

7. *Overall* in all of your discussions with friends and neighbors are you:

often used as a source of advice				not used as a source of advice
5	4	3	2	1

Adoptive Behavior

8. I often try to find out about new GUI computer software before they are officially released.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

9. I often read literature concerning GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

10. I often try to find out about new GUI computer software within the first month they are released.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

11. I usually wait to obtain new GUI computer software until it has been out for several months.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Enduring involvement

12. If I do not use GUI computer software at least once a week, I feel I have missed something.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

13. With all of my schoolwork, the use of GUI computer software is *not* high on my list of priorities.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

14. GUI computer software programs are more than mere software to me. They are like a hobby.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

15. Using GUI computer software is a regular part of my schedule.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

16. I will often use GUI computer software more than once during the day.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

17. I take a close interest in the technical aspects of GUI computer software (programmability, debugging, compatibility with other applications, etc.).

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

18. I can almost always find time to use GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

19. I consider myself a GUI computer software buff.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

20. I often think of using GUI computer software as a treat to myself.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

21. I follow the development of new GUI computer software for the marketplace.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Influence

22. I am usually the one in my group who suggests using GUI computer software to accomplish a task.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

23. I will often steer friends away from GUI computer software I do not like.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

24. I often persuade friends to use the GUI computer software that I like.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

25. My friends often ask me to recommend which GUI computer software they should use.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

26. Friends seek information from me regarding the latest trends in GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

27. Friends ask me about GUI computer software that I have used.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

28. I am able to recommend a GUI computer software retailer to those interested in buying software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Expertise

29. I usually know what the major GUI computer software manufacturers (Microsoft, WordPerfect, etc.)
are working on.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

30. Among my circle of friends, I am one of the "experts" on GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

31. I often know quite a bit about GUI computer software before it is released on the market.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

32. I feel confident recommending GUI computer software to my friends.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

On-Going Information Seeking

33. I browse through computer software or related magazines almost every week.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

34. I pay attention to ads for GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

35. I pay attention to print ads (newspaper & magazines) for GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

36. I listen to ads for GUI computer software retailers when they come on my favorite radio station.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Information Sharing

37. I regularly ask friends about GUI computer software programs before I try them.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

38. I usually talk to friends about GUI computer software programs before I try them.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

39. My friends and I often discuss what GUI computer software programs are worth using.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

40. I often compare my opinion of GUI computer software with others.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

41. I often discuss and listen to other's opinions about GUI computer software I have recently used.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

42. I often talk about GUI computer software at parties and other social situations.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

43. I usually rely on friends' recommendations of GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

44. Usually before considering a GUI computer software program, I will ask my friends their opinion of it.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Frequency of using GUI computer software

45. On average, how many days per week do you use GUI computer software?

__ 0	__2	__4	__6
__ 1	__3	__5	__7

53. How long have you been using GUI computer software?

__Less than 6 months	__19-24 months
__6-11 months	__More than 24 months
__12-18 months	

Personal motives for using GUI computer

46. I enjoy using GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

47. I like to use GUI computer software programs that make me think.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

48. I like to use GUI computer software programs that are fun and easy to work with.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

49. I like to use GUI computer software programs that are sophisticated.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

50. Using GUI computer software is one of my favorite activities.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Social motives for using GUI computer

51. I like to talk to friends about GUI computer software.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

52. I like it when people tell me they have enjoyed GUI computer software that I have recommended.

Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5	4	3	2	1

Interconnectedness

54. Please estimate the number of people you consider to be in your group of closest friends.

__0-5 __11-15 __21-25
__6-10 __16-20 __Over 26

55. How many parties and other social functions did you attend last year?

__0-5 __11-15 __21-25
__6-10 __16-20 __Over 26

56. Do you belong to a social fraternity or sorority?

__YES __NO

57. Do you belong to any other organizations (social, political, religious, etc.)?

__YES __NO

Homophily

58. How similar are you to most students with whom you come in contact at CSUSB in terms of:

	Very Similar	Similar	Neutral	Dissimilar	Very Dissimilar
Career Aspirations	5	4	3	2	1
Types of Friends	5	4	3	2	1
Type of Family	5	4	3	2	1
Social Class	5	4	3	2	1
Income	5	4	3	2	1
Spending Money	5	4	3	2	1
Leisure Activities	5	4	3	2	1

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