Association for Information Systems
AIS Electronic Library (AISeL)

ICIS 1994 Proceedings

International Conference on Information Systems (ICIS)

12-31-1994

Behavioral Indicators of Customer Satisfaction with Vendor-Provided Information Services

Robert Heckman
Syracuse University

William King

BEHAVIORAL INDICATORS OF CUSTOMER SATISFACTION WITH VENDOR-PROVIDED INFORMATION SERVICES

Robert L. Heckman
School of Information Studies
Syracuse University

William R. King
Katz Graduate School of Business
University of Pittsburgh

ABSTRACT

Behavioral dimensions of customer satisfaction with Vendor-Provided Information Services (VPIS) were investigated and three categories of satisfaction-related behaviors were identified: (1) discretionary collaborative behaviors, (2) switching behaviors, and (3) contending behaviors. Of these three classes, discretionary collaborative behaviors appear to have the strongest relationship with satisfaction. Negative behaviors, such as switching and contending, appear to have more complex determinants and thus, in terms of their usefulness as indicators of satisfaction, more error variance. Of the behaviors identified as being most strongly related to satisfaction, none had system usage or system exploration as their primary focus. Behaviors that are most strongly related to satisfaction appear to be non-system oriented, and instead deal with various aspects of the relationship between the vendor and the customer.

1. INTRODUCTION

The User Information Satisfaction (UIS) construct has become one of the fundamental dependent variables in Information Systems (IS) research (DeLone and McLean 1992). It has been used as a surrogate for the effectiveness of individual information systems and IS organizations, and also to assess the success of process-oriented techniques such as increased user participation in IS design. There has been, however, a growing recognition that the theoretical underpinnings of this widely employed construct have been relatively unexplored (Melone 1990; Miller 1989; Goodhue 1986; Treacy 1985). Of special interest is the relationship of the satisfaction construct to various behaviors which may mediate the relationship between satisfaction and performance-related output variables (Melone 1990; DeLone and McLean 1992; Etezadi-Amoli and Farhoomand 1991).

In addition, most UIS research makes an implicit assumption about the organizational affiliation of information system providers and users. This assumption, which reflects the situation prevalent throughout the early history of computing, is that both IS providers and users reside within the boundaries of a single organization being studied. Modern users of information systems, however, often find themselves in the role of customers of vendors who provide their systems. Organizations are turning to outside providers for components of their application systems, system development activities, and a broad variety of system management services. Yet despite this trend toward outsourcing IS functions, there has been relatively little IS research which specifically addresses issues within this context.

In the domain of vendor-provided information services (VPIS), user information satisfaction becomes customer satisfaction, and the issue of satisfaction as a surrogate for IS effectiveness is displaced by the more tangible issue of satisfaction as a necessary condition for the vendor's competitive survival. This paper reports the results of an empirical investigation into the behavioral consequences of VPIS satisfaction/dissatisfaction. It builds on previous work on the UIS construct and explicitly grounds the inquiry in the attitude model found in the theory of reasoned action (Fishbein and Ajzen 1975; Ajzen and Fishbein 1980) and theory of planned behavior (Ajzen 1991). Thus,

it extends work on the satisfaction construct into the increasingly important VPIS domain and aligns the work with a theoretical model which has gained wide acceptance. Finally, the paper describes the development and evaluation of a behavioral scale which measures VPIS satisfaction.

2. BACKGROUND

2.1 The UIS Construct

There have been several efforts to develop measures of UIS. The most widely used, the Ives, Olson and Baroudi (1983) adaptation of the Bailey and Pearson (1983) instrument, measures UIS with the IS environment as a whole. The original Bailey-Pearson instrument contained 39 distinct scales which measured beliefs about the IS environment. Ives, Olson and Baroudi extended this work by shortening the form from 39 to 21 scales. The Ives-Olson-Baroudi form has become the most widely accepted measure of UIS used in IS research despite several critical assessments (Galletta and Lederer 1989; Treacy 1985). Doll and Torkzadeh (1988) developed a new UIS instrument to measure satisfaction of end-users who directly interact with a specific application. They labeled this new construct End User Information Satisfaction (EUIS). The twelve item instrument can be construed as a measure of satisfaction with components of a specific information system product.

While these efforts have assessed the measurement properties of their respective instruments, the theoretical foundations of the UIS construct have not been widely considered and, as a result, previous research provides a variety of empirical findings with little theory to integrate them (Melone 1990; DeLone and McLean 1992). Melone, however, observes that virtually all previous considerations of UIS "hold in common the notion of a user providing some form of evaluative response." From this observation, Melone goes on to propose that subsequent UIS research focus on a broader construct, *user attitude*, which embodies the evaluative component found in the UIS construct

Melone recommends the theory of reasoned action (TRA) definition of attitude, "*A predisposition to respond favorably or unfavorably to an object, person, institution, event, or other discriminable aspect of the individual's world*" (Ajzen 1988), because it is not overly restrictive in defining permissible objects about which the attitude is held. In this research, the TRA definition of attitude will be employed and VPIS Satisfaction will be considered to be a generalized attitude toward significant targets (such as system, vendor, and price) in the VPIS environment. While this definition of VPIS Satisfaction as an attitude is consistent with Melone's recommendation, and serves to ground the construct in TRA, it appears to conflict with a common approach to defining the Satisfaction construct in the marketing literature. In much consumer satisfaction research, the Satisfaction construct has been defined as a relatively transitory, post-consumption response state, rather than as a stable, enduring attitude (Oliver 1981). There has, however, been a growing recognition that satisfaction/dissatisfaction also contains an enduring, stable dimension that behaves like an attitude (Swan 1983; Nguyen 1991). Likewise, research on Perceived Service Quality (PSQ) (Gronroos 1982; Parasuraman, Zeithaml and Berry 1985, 1988; Liljander and Strandvik 1992) depicts PSQ as an enduring, attitude-like construct with determinants remarkably similar to consumer Satisfaction. (For a more detailed description of research exploring the structure of Satisfaction defined as an attitude, see Heckman 1993.)

Melone also proposes that output-oriented criteria such as user behavioral responses should be used in addition to affect oriented measures of IS success. Such criteria will be useful in developing theories "for predicting *a priori* the likely responses of users in advance of system introduction. At this time, theories in IS involving user satisfaction are simply not powerful enough to perform this function" (p. 77). Thus, she emphasizes the critical importance of creating theoretical frameworks which pay attention to relationships between attitude and behavior.

2.2 The Influence of Attitude on Behavior

Much research has been devoted to understanding the influence of attitude on behavior. Wicker (1969) has provided a comprehensive review of research containing weak attitude-behavior relationships. Greenwald (1988) also notes that this research has largely been unpromising, with low or non-significant relationships between attitudinal predictors and behavioral criteria. Ajzen and Fishbein (1977), however, argue in a later review that these weak findings are generally a result of methodological and measurement problems, primarily due to a lack of correspondence in critical elements (target, action, context, and time) between predictors and criteria. Their review suggests that strong attitude-behavior relationships are obtained under high correspondence between at least the target and action elements of the attitudinal and behavioral entities. The notion of correspondence led Ajzen and Fishbein to develop their view that attitude toward a particular behavior, rather than attitude toward an object or target, was the appropriate attitude measure when trying to predict a specific behavior.

In TRA, behavioral attitudes are proposed to exert a dynamic or directive effect on behavior through the mediation of the *behavioral intention* construct, and Ajzen and Fishbein (1980) cite evidence to support their contention that the best predictor of a particular behavior is the intention to perform it. Behavioral intention is a function of *attitude toward the behavior* and the *subjective norm* experienced by the individual actor concerning the behavior. Contrary to the approach taken by previous attitude-behavior research, which assumed that a positive attitude toward a particular object would result in positive behavior toward the object, TRA asserts that attitude toward the target object can affect behavioral intent only indirectly, through the medium of specific behavioral and normative beliefs and attitudes. Thus we would not expect attitudes toward particular IS targets (e.g., the system, the IS department, the vendor) to necessarily correlate strongly with *specific* behaviors.

The TRA position that the determining attitude is toward the behavior itself, rather than toward the target of the behavior, is consistent with mixed results in IS research attempting to link UIS to system usage (Srinivasan 1985; Baroudi, Olson and Ives 1986; Schewe 1976). In TRA terms, UIS would be considered an attitude toward a general target or set of targets, while system usage is a specific action toward a precisely specified target. TRA would predict that the attitude toward usage itself is far more important than UIS for predicting a single behavioral criterion such as usage.

By reducing the attitude construct to a simple, bipolar evaluative response, and by pointing out the difference between attitude-toward-target-object and attitude-toward-behavior, Ajzen and Fishbein have provided IS research with a theoretical framework which is consistent with much previous research. One drawback, however, of working within this framework is the difficulty it presents in relating the satisfaction construct (viewed as an attitude toward general targets — e.g., UIS, EUIS, VPIS satisfaction) to specific behaviors such as system use. The question remains: within the TRA framework, is there a way to work with both behavior AND a more generalized attitude such as satisfaction?

One way of addressing this problem is to develop multiple-act behavioral criteria. Fishbein and Ajzen (1974) have argued that a relatively strong direct relationship between attitudes toward general target objects and behaviors is likely to be found if multiple rather than single behavioral criteria are used:

> A person's attitude towards an object need not be related to any single behavior that may be performed with respect to the object (i.e., may not permit prediction of single-act criteria). However, it should be related to the overall pattern of his behaviors (i.e., it should predict multiple-act criteria). [Fishbein and Ajzen 1974, p. 61]

The adoption of multiple-act behavioral criteria might prove fruitful in the IS research field by allowing researchers to attend to behaviors other than (or in addition to) usage. While it has been appropriately argued that the organizational benefits of an IS can only be achieved through its use, a number of other behaviors relative to the IS can be important determinants of its positive or negative organizational impact (e.g., complaining, praising, reading documentation, urging others to support or resist the system, offering or withholding suggestions for improvement, sabotage, etc.). When a system is vendor-provided, behaviors such as serving as a reference to prospective buyers, terminating or renewing a contract, and buying additional products from the vendor are also significant. Thus, development of a multiple-act behavioral index of customer satisfaction would appear to have both practical and theoretical benefits in this domain.

Using these theoretical assumptions about attitude and behavior as a foundation, this study addresses the following questions:

- Which behaviors are most strongly associated with VPIS satisfaction?
- Can a psychometrically validated behavioral scale of VPIS satisfaction be developed?
- What are the underlying dimensions of satisfaction-related behaviors?

3. PRELIMINARY PHASES OF INSTRUMENT DEVELOPMENT

A systematic instrument development process begins with an explicit definition or established theory for classifying and evaluating the items (in this case, molecular behaviors) to be potentially included in the item pool (Jackson and Paunonen 1985). Rather than assembling items on a purely intuitive or empirical basis, construct validity is likely to be improved if the underlying theory provides some basis for selection or exclusion from the pool. In this way, construct validity is more likely to be built into the scale from the outset, as opposed to simply testing for validity after the fact (Nunnally 1978). In this case, behaviors to be included were required to be exemplars of very satisfied or dissatisfied customers, according to domain experts. In addition,

to meet the correspondence principle of TRA, a behavior was required to specifically refer to either the system or vendor as its target.

3.1 Study 1: Structured Interviews

A series of structured interviews were conducted with vendors (N = 9), customers (N = 6), and consultants familiar with the banking applications market and who professionally assist customers in the evaluation of prospective system vendors (N=4). These interviews were structured to elicit positive and negative behaviors targeted toward the vendor or system, which the respondent believed to be representative of customer satisfaction and dissatisfaction. Two lists were produced: positive behaviors believed to be indicators of satisfaction (62 items) and negative behaviors believed to be indicators of dissatisfaction (95 items). Results of this analysis suggest that subjects found it easier to generate negative (dissatisfaction) exemplars than positive exemplars.

Redundant items were removed from each list and each remaining item was evaluated to determine whether the target of the behavior was the system or the vendor. If a behavior did not clearly refer to either the system or vendor as its target, it was dropped from the pool. In eliminating redundancy, it was noted that the number of positive and negative behaviors were approximately equal. At that point, a decision was made to intentionally generate a pool containing an equal number of positive and negative behaviors. This analysis resulted in the two lists of items shown in Tables 1 and 2.

3.2 Study 2: Expert Rating of Behavioral Items

The 60-item pool was next subjected to an analysis technique developed by Fishbein and Ajzen (1974) which is used to determine whether individual behavioral items are likely to correlate strongly with traditional measures of attitude. They argue that a particular behavior is likely to be a useful attitudinal indicator "to the extent that the probability of its performance is high for people with favorable attitudes *and* low for people with unfavorable attitudes. The opposite should be true for negative behaviors" (p. 68). These ideas can be expressed in terms of conditional probabilities, where $p(B|A+)$ is the probability of performing the behavior given a positive attitude, and $p(B \mid A-)$ is the probability of performing the behavior given a negative attitude. The greater the absolute value of the difference between these two conditional probabilities, the stronger is the correlation likely to be between a measure of attitude and the behavior in question. This absolute difference is referred to as the ***linearity index*** of a given behavioral item.

$$\textit{linearity index} = \mid p(B \mid A+) - p(B \mid A-) \mid$$

A sample of 43 expert judges evaluated the pool of 60 behavioral items. The sample consisted of people experienced in either buying or selling roles in the information services industry. The sample consisted of eighteen Buyers, fifteen Sellers, and ten who were both Buyers and Sellers. Following the procedure described by Fishbein and Ajzen (1974), the two conditional probabilities needed to compute the linearity index were obtained by asking respondents to evaluate each behavioral item twice. On the first pass, each rater estimated the probability (using an 11-point Likert-type scale anchored by "very likely" and "very unlikely") that a very satisfied customer would perform the behavior. Again following the Fishbein and Ajzen (1974) procedure, the conditional probability $p(B|A+)$ for each item was then derived from these responses by subtracting 1 and dividing by 10. In a similar fashion, the conditional probability of the performance of each behavior given a negative attitude $p(B|A-)$ was obtained. The linearity index was then computed for each of the 60 items, and is shown in Table 3, column 1.

3.3 Study 3: Further Refinement of Behavioral Items

In order to further refine the behavioral item pool, a sample of 108 part-time MBA students, drawn from five classes at a single university, were surveyed concerning their satisfaction with any vendor-provided information system they used on their jobs. Only students with full-time work experience were included in the sample.

Relying on the consistently strong relationship between behavioral intent and behavior reported in TRA research (Ajzen and Fishbein 1980), behavioral intent was used as a surrogate for actual behavior in this study. Respondents were asked how likely they were to perform each of the 60 behaviors at some point during their relationship with the vendor. Correlations were calculated between a two-item overall satisfaction measure (*alpha* = .847) and each of the 60 behaviors. Table 3 shows both the Linearity Index obtained in Study 2 and the Behavior-VPIS Satisfaction correlation for each of the behavioral items. The table is ranked in Linearity Index order. To the authors' knowledge, there is no generally accepted cutoff value for linearity index testing. Thus, an arbitrary criteria for inclusion was chosen by the authors that would cause an item to be selected with *either* a high linearity index value in Study 2 *or* a high correlation with the external criterion in Study 3. The criteria for inclusion in continued testing was a Linearity Index value greater than .50 in Study 2 **OR** a Satisfaction - Behavior correlation significant at the .01 level in Study 3. This criteria resulted in the selection of 36 behavioral items for further evaluation.

Table 1. Positive Item Pool: Behavioral Index of VPIS Satisfaction

TARGET	
	Buy More From Vendor:
[S+V]	Purchase additional system products from the vendor.
	Learn More About the System:
[S]	Ask questions about the system to learn as much as possible about it.
[S]	Try out unfamiliar features of the system to find new and better ways to use it.
[S]	Read the system documentation to learn more about the system.
	Expand Use of the System:
[S]	Look for new ways to use the system.
[S]	Use new features of the system as soon as they are released.
[S]	Change procedures to take advantage of unique capabilities of this system.
	Agree To Be a Reference for the Vendor.
[S+V]	Serve as an existing-customer reference to prospective buyers of this product.
[S+V]	Welcome prospective buyers of this product into our shop to see the system in operation.
	Pilot Test / Beta Test New Version of the System.
[S]	Allow our shop to be a beta test site for a new release of this product.
	Work Together in Partnership With Vendor.
[V]	Work closely with the vendor to develop new product initiatives.
[V]	Actively participate in a users' group to provide new product input
[V]	Participate in an advisory group to help shape the vendor's strategic direction.
[V]	Informally exchange ideas about industry and technology direction with the vendor.
[V]	Provide leads on prospective customers to the vendor.
	Renew Existing Contracts and/or Service Agreements.
[S+V]	Renew existing contracts and/or service agreements when they expire.
[S+V]	Renew existing contracts without a prolonged negotiation with the vendor.
	Personal Relationships/ Contact/ Entertainment.
[V]	Have breakfast, lunch or dinner as a guest of the vendor.
[V]	Attend a sporting event or other entertainment as a guest of the vendor.
[V]	Play golf, or otherwise participate in a sporting activity as a guest of the vendor.
[V]	Form a personal friendship with someone from the vendor organization.
	Communication With the Vendor.
[S+V]	Call the vendor to complement its product and/or services.
[S+V]	Write the vendor to complement its product and /or services.
[V]	Assume a tolerant and understanding posture when dealing with the vendor on a problem.
[V]	Give the vendor the benefit of the doubt when an apparent problem comes up.
	Communication Within The Customer Organization.
[V]	Support and defend the vendor in meetings with senior management.
[V]	Support and defend the vendor in discussions with my subordinates.
[S]	Praise the quality of the vendor's product and service to my co-workers.
	Communication Outside the Customer Organization.
[S+V]	Praise this vendor and its products to someone who asks about them at a cocktail party.
[S+V]	Praise this vendor and its products to a prospective buyer who seeks me out on his own.

Total: 30 Positive Items.

Table 2. Negative Item Pool: Behavioral Index of VPIS Satisfaction

TARGET	
	Avoid Using The System.
[S]	Look for ways to get the job done without relying on the system
[S]	Avoid using any features of the system that are not absolutely mandatory
[S]	Change procedures to avoid using the system
	Withhold or Slow Down Payment.
[V]	Delay payment to the vendor until outstanding issues are resolved
[S+V]	Request credit or reimbursement for additional expenses incurred due to use of the product
	Search for A Replacement System/Vendor.
[S+V]	Issue an RFP to replace this vendor's products
[S+V]	Begin a search for an alternative product without inviting this vendor to participate
	Restructure/Renegotiate the Relationship With the Vendor.
[V]	Renegotiate and restructure the contractual relationship with this vendor
[V]	Negotiate more rigorous performance standards in any renewal contract with this vendor
[V]	Insist on financial concessions from the vendor in order to renew the service agreement
	Change Procedures Due to Vendor Problems.
[V]	Set up special procedures to monitor the quality of this vendor
[S]	Change procedures to protect against undesirable effects of using the system
	Reduce Participation in Vendor-Sponsored Activities.
[S]	Reduce participation in the users' group for this product
[V]	Reduce attendance at vendor-sponsored meetings and activities
[V]	Reduce attendance at sporting and social events sponsored by the vendor
	Withdraw: Stop Complaining, Give Up on Vendor.
[V]	Give up trying to get the vendor to respond to concerns
[V]	Give up trying to communicate with the vendor
	Become More Demanding.
[V]	Become more demanding with the vendor
[V]	Show less tolerance, less patience with the vendor
[V]	Become less flexible on small matters; do not make even small concessions
	Formalize Communications With Vendor.
[V]	Establish formal, regularly scheduled meetings to review issues and vendor follow-up
[V]	Set up regular written status reports to monitor vendor progress on problems
	Communication within the Customer Organization.
[V]	Make sure everyone in the company knows about the problems with this product
[V]	Take complaints about the vendor to the top management in our organization
	Communication with the Vendor.
[S+V]	Phone the vendor to express dissatisfaction with its product and service
[S+V]	Write the vendor to express dissatisfaction with its product and service
[V]	Escalate concerns to top management in the vendor organization
[V]	Threaten the vendor with legal action if concerns are not addressed
	Communication With Those in Other Organizations.
[S+V]	Talk to other companies who use this product to find out if they have similar problems
[V]	Take joint action with other customers to persuade the vendor to address concerns

Total: 30 negative items.

Table 3. Behavioral Item Pool Ranked by Linearity Index

LIN INDEX	ITEM NR.	SAT CORR	ITEM TEXT
.79	1.	.51 **	Purchase additional system products from the vendor
.76	4.	.40 **	Serve as an existing-customer reference to prospective buyers of this System
.75	11.	.53 **	Praise this vendor and its products to someone who asks about them at a cocktail party
.73	26.	.45 **	Praise this vendor and its products to a prospective buyer who seeks information
.71	8.	-.33 **	Begin a search for an alternative System without inviting this vendor to participate
.70	40.	.51 **	Praise the quality of the vendor's System and service to co-workers
.68	10.	.47 **	Support and defend the vendor in meetings with senior management
.68	19.	.36 **	Provide leads on prospective customers to the vendor
.68	6.	-.34 **	Issue an RFP to replace this vendor's products
.65	43.	-.40 **	Show less tolerance, less patience with the vendor
.65	39.	.30 **	Write the vendor to complement its System and/or services
.64	58.	-.38 **	Become less flexible on small matters; do not make even small concessions
.64	36.	.37 **	Renew the existing contract without a prolonged negotiation with the vendor
.63	5.	.17	Allow our shop to be a beta test site for a new release of this System
.63	60.	.52 **	Support and defend the vendor in discussions with subordinates
.60	34.	.19	Welcome prospective buyers of this System into the shop to see the system in operation
.60	7.	.37 **	Renew existing contracts and/or service agreements when they expire
.60	24.	.35 **	Give the vendor the benefit of the doubt when an apparent problem comes up
.59	9.	.31 **	Call the vendor to complement its System and/or services
.58	28.	.36 **	Assume a tolerant and understanding posture when dealing with the vendor on a problem
.57	30.	-.38 **	Avoid using any features of the system that are not absolutely mandatory
.56	53.	-.11	Write the vendor to express dissatisfaction with its System and service
.56	14.	.05	Threaten the vendor with legal action if concerns are not addressed
.55	47.	-.28 **	Reduce attendance at sporting and social events sponsored by the vendor
.55	3.	-.11	Delay payment to the vendor until outstanding issues are resolved
.53	52.	-.34 **	Change procedures to avoid using the system
.52	2.	-.21 *	Look for ways to get the job done without relying on the system
.52	31.	.25 *	Actively participate in a users' group to provide new System input
.51	59.	-.36 **	Insist on financial concessions from the vendor in order to renew the service agreement
.51	42.	.31 **	Play golf, or otherwise participate in a sporting activity as a guest of the vendor
.51	22.	.31 **	Attend a sporting event or other entertainment as a guest of the vendor
.51	57.	-.26 **	Reduce attendance at vendor-sponsored meetings and activities
.51	56.	.21 *	Informally exchange ideas about industry and technology direction with the vendor
.49	15.	.21 *	Use new features of the system as soon as they are released
.49	54.	.21 *	Work closely with the vendor to develop new System initiatives
.48	18.	-.15	Become more demanding with the vendor
.48	21.	.20 *	Have breakfast, lunch or dinner as a guest of the vendor
.48	38.	.09	Form a personal friendship with someone from the vendor organization
.47	44.	.23 *	Change procedures to take advantage of unique capabilities of this system
.47	46.	-.24 *	Give up trying to communicate with the vendor
.47	27.	-.21 *	Negotiate more rigorous performance standards in any renewal contract with this vendor
.47	16.	.01	Take complaints about the vendor to the top management in own organization
.45	23.	-.21 *	Reduce participation in the users' group for this System
.45	51.	-.11	Renegotiate and restructure the contractual relationship with this vendor
.45	45.	.28 **	Participate in an advisory group to help shape the vendor's strategic direction
.44	49.	.01	Set up special procedures to monitor the quality of this vendor
.44	41.	.06	Make sure everyone in the company knows about the problems with this System
.43	13.	.06	Try out unfamiliar features of the system to find new and better ways to use it
.42	35.	-.03	Escalate concerns to top management in the vendor organization
.41	29.	-.07	Request credit or reimbursement for additional expenses incurred due to use of the System
.40	50.	.27 **	Look for new ways to use the system
.40	37.	-.07	Phone the vendor to express dissatisfaction with its System and service
.38	48.	.24 *	Ask questions about the system to learn as much as possible about it
.38	17.	.06	Set up regular written status reports to monitor vendor progress on problems
.37	12.	.02	Take joint action with other customers to persuade the vendor to address concerns
.35	32.	.16	Read the system documentation to learn more about the system
.34	55.	.08	Establish formal, regularly scheduled meetings to review issues and vendor follow-up
.33	25.	-.14	Change procedures to protect against undesirable effects of using the system
.31	20.	-.29 **	Give up trying to get the vendor to respond to concerns
.29	33.	.03	Talk to other companies who use this System to find out if they have similar problems

*$p < .05$ **$p < .01$

Table 4. Final Item Pool

B1	Purchase additional system products from the vendor
B2	Threaten the vendor with legal action
B3	Praise the quality of the vendor's system and service to co-workers
B4	Delay payment to the vendor
B5	Allow your shop to be a beta test site for a new release of the system
B6	Issue an RFP to replace this vendor's system
B7	Renew existing contracts or service agreements when they expire
B8	Search for a new system without asking this vendor to participate
B9	Praise this vendor to someone who asks about it at a cocktail party
B10	Show less tolerance, less patience with the vendor
B11	Write the vendor to compliment its system and/or service
B12	Become less flexible; do not make even small concessions
B13	Provide leads on prospective customers to the vendor
B14	Assume a tolerant posture when dealing with the vendor on problems
B15	Avoid using system features that are not absolutely mandatory
B16	Renew the existing contract without a long negotiation
B17	Write the vendor to express dissatisfaction with its system and service
B18	Praise vendor and system to potential buyers who seek information
B19	Reduce attendance at vendor-sponsored sporting and social events
B20	Attend a sporting event or other entertainment as a guest of the vendor
B21	Serve as a current-customer reference to potential buyers of the system
B22	Change procedures to avoid using the system
B23	Support and defend the vendor in meetings with senior management
B24	Actively participate in a users' group to provide new product input
B25	Informally share ideas about industry direction with the vendor
B26	Support and defend the vendor in discussions with subordinates
B27	Welcome prospective buyers of this system to see it in operation
B28	Give the vendor the benefit of the doubt when problems come up

3.4 Pretest and Pilot Test

The revised instrument was reviewed by four IS and marketing faculty members and pretested by six respondents with extensive experience dealing with information services vendors. Each respondent filled out the survey completely and was then debriefed. Both faculty reviewers and pretest subjects suggested that a number of items appeared similar and, in some cases, nearly identical. As a result, eight additional items were dropped from the instrument. In order to identify any remaining problems, the revised instrument was pilot tested by mailing it to a representative random sample of 120 individuals drawn from the sample frame to be used in the primary data gathering effort. Nineteen usable surveys were returned (response rate = 16%), suggesting that follow-up mailings would be required in the primary data gathering effort. The pilot test confirmed that subjects were able to understand and respond to the items. The final pool of 28 items is shown in Table 4.

4. PRIMARY DATA GATHERING EFFORT

The survey was mailed to 974 randomly selected commercial banks between $100 million and $300 million in assets. This size range was chosen because it represents banks which are of moderate size but too small to afford complete in-house data processing operations. Thus they are likely to be intensive users of vendor-provided information services. The Operations Officer was selected as the respondent because the incumbent of that position is likely to be a member of senior management, responsible for a majority of application system users, and responsible for liaison with information services vendors. Of the 974 institutions selected, 335 returned usable questionnaires, for an overall response rate of 34.4%.

Respondents were distributed across four levels of management (executive or senior level: 39%, middle or first level: 61%) and were relatively experienced, both in terms of overall work experience (mean = 20.5 yrs, s.d. = 8.4 yrs) and experience with the type of product they were evaluating (mean = 11.8 yrs, s.d. = 6.9 yrs.).

Use these scales to indicate your overall evaluation of the SYSTEM

good|__|__|__|__|__|__|__|bad

satisfactory|__|__|__|__|__|__|__|unsatisfactory

Use these scales to indicate your overall evaluation of the VENDOR

good|__|__|__|__|__|__|__|bad

satisfactory|__|__|__|__|__|__|__|unsatisfactory

Use these scales to indicate your overall evaluation of SYSTEM COST

good|__|__|__|__|__|__|__|bad

satisfactory|__|__|__|__|__|__|__|unsatisfactory

Figure 1. External Criterion of VPIS Satisfaction

5. RESULTS OF DATA ANALYSIS

Correlations were obtained between each item and an external criterion of VPIS Satisfaction. This criterion was a six-item semantic differential scale constructed in the manner recommended by Ajzen and Fishbein (1980) to measure attitude (see Figure 1). The reliability of this scale as indicated by coefficient *alpha* was .95. Table 5 shows the correlation of each behavioral item with VPIS Satisfaction. In this table, negative items have been reverse-coded, so all correlations are shown as positive. In order to eliminate those items which were weak indicators of VPIS Satisfaction, items with correlation coefficients of less than .30 were dropped from further analysis. Since there are no accepted standards, this cut off was arbitrary. All retained items were significant at $p < .01$ and the cut off was considered high enough to ensure that they were adequate indicators of the VPIS Satisfaction construct. This resulted in the elimination of five items (B4, B15, B20, B24, and B25).

5.1 Factor Analysis

The remaining twenty-three items were subjected to a principal components factor analysis to evaluate the underlying dimensionality of the items. Using an eigen value cutoff of 1.00 and varimax rotation, the analysis identified three factors. The rotated factor matrix is shown in Table 6. The three-factor solution shown in Table 6 (B14) contains two items with relatively low loadings on all three factors (B19 and B22). In addition, one item has loadings greater than .5 on two factors (B1). These three items were dropped from subsequent analysis. At this early stage in the investigation of satisfaction related behaviors, it was decided to retain four items with loadings between .40 and .45 on a secondary factor (B2, B7, B12, B16). Application of these criteria left twenty items remaining and these items are grouped into a reasonably interpretable factor structure (Table 7).

Factor 1 contains twelve items which are all positive (presumably indicating satisfaction). The items describe acts of positive information sharing to potential customers of the system product, prospecting for potential new business on the vendor's behalf, showing patience and tolerance when dealing with problems, supporting and defending the vendor to management and co-workers, serving as a beta test site for a new release of the product, and providing positive feedback to the vendor. Since these items describe various forms of discretionary assistance to the vendor (in the sales process, in the product development process, in day-to day problem solving) which go beyond contract requirements, this factor was labeled "**DISCRETIONARY COLLABORATIVE BEHAVIOR (DCB).**"

Factor 2 contains five items, three negative and two positive in formulation. Four of these items are involved with

Table 5. Correlation of Behavioral Items with VPIS Satisfaction

B1	.6445**	B11	.4108**	B21	.6851**
B2	.4021**	B12	.5227**	B22	.5631**
B3	.7457**	B13	.6103**	B23	.7515**
B4	.2930**	B14	.3637**	B24	.2893**
B5	.3766**	B15	.2675**	B25	.2232**
B6	.5227**	B16	.5274**	B26	.6688**
B7	.5596**	B17	.3367**	B27	.6548**
B8	.4373**	B18	.7815**	B28	.5036**
B9	.7801**	B19	.4409**		
B10	.5881**	B20	.1240*		

* $p < .05$
** $p < .01$

Table 6. Factor Analysis of Satisfaction-Related Behaviors
Rotated Factor Matrix

	FAC 1	FAC 2	FAC 3
B1	**.55773**	**.56537**	.08617
B2	.02999	**.58072**	.42358
B3	**.79747**	.34921	.20110
B5	**.58022**	.17170	.02264
B6	.25873	**.68376**	.20099
B7	.44305	**.69755**	-.02696
B8	.09868	**.67345**	.27998
B9	**.77681**	.36193	.17493
B10	.38859	.33296	**.59626**
B11	**.60526**	.17051	.03021
B12	.29803	.40667	**.60976**
B13	**.79697**	.17264	.20684
B14	**.59411**	-.06928	.28466
B16	.43058	**.57297**	.07574
B17	.09307	.05295	**.77123**
B18	**.81197**	.34989	.26690
B19	.36055	.32813	.39700
B21	**.81484**	.27400	.25959
B22	.40679	.30746	.35971
B23	**.78081**	.37047	.23018
B26	**.74601**	.36751	.20710
B27	**.76794**	.29032	.17048
B28	**.67373**	.11232	.31819

the question of whether or not to continue the contractual relationship with the vendor. Two describe a positive outcome to the continuation decision while two behaviors reflect a decision to switch to a new vendor. The fifth item describes threatening the vendor with legal action, a negative step which is usually a sign of a deteriorating relationship, and often a precursor of a decision to switch to a new supplier. Factor 2 was labeled "**SWITCH.**"

Factor 3 contains three negative items which express dissatisfaction with the vendor. Two involve expressing dissatisfaction by becoming less flexible, less tolerant, and

Table 7. Factor Analysis Subscales

FACTOR 1: DCB

B3	Praise the quality of the vendor's system and service to co-workers
B5	Allow your shop to be a beta test site for a new release of the system
B9	Praise the vendor to someone who asks about it at a cocktail party
B11	Write the vendor to complement its system or service
B13	Provide leads on prospective customers to the vendor
B14	Assume a tolerant posture when dealing with the vendor on problems
B18	Praise the vendor and system to prospective buyers who seek information
B21	Serve as a current-customer reference to potential buyers of the system
B23	Support and defend the vendor in meetings with senior management
B26	Support and defend the vendor in discussions with subordinates
B27	Welcome prospective buyers of the system to see it in operation
B28	Give the vendor the benefit of the doubt when problems come up

FACTOR 2: SWITCH

B2	Threaten the vendor with legal action
B6	Issue an RFP to replace this vendor's system
B7	Renew existing contracts or service agreements when they expire
B8	Search for a new system without asking this vendor to participate
B16	Renew the existing contract without a long negotiation

FACTOR 3: CONTEND

B10	Show less tolerance, less patience with the vendor
B12	Become less flexible, do not make even small concessions
B17	Write the vendor to express dissatisfaction with its system and service

Table 8. Means, Standard Deviations and Reliabilities for Behavioral Variables

	MEAN	S.D.	ALPHA
ALL 20 ITEMS	5.03	1.21	.9439
DCB	4.74	1.42	.9732
SWITCH	2.12	1.29	.7794
CONTEND	2.86	1.34	.7034

less patient in day to day dealings with the vendor. The third item describes a more formal expression of dissatisfaction. Because these items describe contentious behaviors toward the vendor, this factor was labeled "**CONTEND.**"

The internal consistency of the overall, twenty item behavioral scale and each of the three subscales were evaluated using coefficient alpha. Reliabilities for all scales were above .70. Table 8 shows means, standard deviations, and reliabilities for each scale. All items in **SWITCH** and **CONTEND** have been negatively coded so that they can be more easily interpreted as indicators of dissatisfaction.

5.2 Convergent and Discriminant Validity

Table 9 contains a correlation matrix of the twenty remaining items. The multitrait-multimethod approach (Campbell

and Fiske 1959) to convergent validity requires that the correlations between indicators of the same construct are different than zero and large enough to warrant further investigation. All within-construct correlation coefficients are significantly different than zero ($p < .01$) and appear large enough to justify additional investigation.

The multitrait-multimethod approach to discriminant validity counts for each item the number of times it correlates more highly with an item from another construct than with items from within its own construct (Treacy 1985; Doll and Torkzadeh 1988). Campbell and Fiske propose that if the number of such violations is less than half of the total number of potential comparisons, discriminant validity is acceptable. However with the common method bias introduced by a single survey instrument, this standard may be overly liberal.

Table 9 shows that there are a number of violations of the discriminant validity test. In the **DCB** factor, the ratio of violations to potential comparisons is 47/96. For **SWITCH** and **CONTEND** the ratios are 43/75 and 29/51 respectively. Inspection of the matrix suggests that the majority of the violations can be attributed to seven items. These items are B5, B11, and B14 in the **DCB** factor, B2, B7, B16 in the **SWITCH** factor, and B17 in the **CONTEND** factor. Deletion of these items results in the following three subscales: **DCB** (9 items, *alpha* = .9609, discriminant violation ratio = 3/36); **SWITCH** (2 items, *alpha* = .6382, discriminant violation ratio = 0/22), and **CONTEND** (2 items, *alpha* = .7847, discriminant violation ratio = 5/22). The overall thirteen item scale of VPIS Satisfaction has an *alpha* of .9473 and a discriminant violation ratio of 8/80.

While the deletion of seven items achieves acceptable discriminant validity, it is costly in terms of subscale reliability. The **SWITCH** and **CONTEND** subscales are left with only two items each. Mulaik (1972) notes that measurements of theoretical factors should contain at least three indicators apiece in order to avoid situations where the factor is indeterminant. In addition the reliability coefficient of **SWITCH** (.6382) is weak and that of **CONTEND** (.7847) is only marginally acceptable for scale development purposes. Thus, while these two constructs have theoretical interest and deserve further investigation, their measurement properties in current form are inadequate. The nine item **DCB** scale, however, has remained highly reliable while achieving acceptable discriminant validity. In fact, both its reliability and correlation with the external criterion are superior to the thirteen item scale as a whole. Therefore, the nine item scale in its current form (Table 10) may be useful in future research applications where a behavioral scale of VPIS satisfaction is desired.

6. DISCUSSION

6.1 Good and Bad Indicators of Satisfaction

Since many researchers (Melone 1990; DeLone and McLean 1992; Etezadi-Amoli and Farhoomand 1991) have discussed the importance of understanding the relationship of satisfaction to a variety of behaviors, it may prove useful to further examine the distinction between behaviors found in this study to be "good" and "bad" indicators of satisfaction. A particular *positive* behavior is considered a good indicator of an attitude such as VPIS Satisfaction if the probability of performing the behavior is high for those who possess high levels of the attitude AND is low for those who possess low levels of the attitude. A *negative* behavior is considered a good indicator of VPIS Satisfaction if the reverse is true: the probability of performing the behavior is high if Satisfaction is low AND is low if Satisfaction is high. Many behaviors which intuitively seem to be suitable are, in fact, poor indicators of underlying constructs such as satisfaction because their performance or non-performance is determined by a variety of other factors, as the theory of reasoned action predicts. Based on the results of this study, two general observations about good and bad indicators of satisfaction can be made.

First, there appears to be a tendency for items which are good indicators of the satisfaction attitude to describe positive behaviors. In preliminary interviews with domain experts, subjects generally found it easier to generate negative behaviors (reflecting dissatisfaction). However, throughout the process of instrument refinement, positive items proved to be more consistent indicators of satisfaction. For example, when the original sixty items were subjected to linearity index analysis, sixteen of the twenty best performing items described positive behaviors, while fifteen of the twenty worst performing items described negative behaviors. In the final survey, the top twenty items are made up of fourteen positive behaviors and six negative behaviors The nine items with the highest correlations with VPIS Satisfaction are all positive behaviors.

This pattern suggests that negative behaviors may be more influenced by factors other than satisfaction than are positive behaviors. One possible explanation for this finding is that negative behaviors are stressful, involve conflict, and have the potential for more negative consequences, and the anticipation of these negative consequences creates a level of determinant complexity not found in positive behaviors. Fishbein and Ajzen (1974) have pointed out that for a behavior to be a reliable indicator of attitude, its relationship to that attitude must be linear. If, for some reason, negative behaviors have a greater tendency toward nonlinear relationships with the satisfaction attitude, we would

Table 9. Correlation Matrix of Twenty Behavioral Items

	B3	B5	B9	B11	B13	B14	B18	B21	B23	B26	B27	B28	B2	B6	B7	B8	B16	B10	B12	B17
B3	1.00																			
B5	.41	1.00																		
B9	.84	.44	1.00																	
B11	.47	.41	.46	1.00																
B13	.69	.46	.71	.53	1.00															
B14	.42	.29	.37	.30	.44	1.00														
B18	.82	.48	.86	.48	.74	.47	1.00													
B21	.76	.48	.80	.48	.77	.47	.83	1.00												
B23	.80	.40	.79	.42	.71	.43	.85	.78	1.00											
B26	.71	.40	.70	.43	.64	.42	.77	.69	.84	1.00										
B27	.69	.43	.71	.38	.73	.43	.77	.81	.74	.70	1.00									
B28	.51	.36	.48	.31	.52	.47	.60	.56	.59	.64	.54	1.00								
B2	.35	.12	.33	.17	.27	.15	.36	.34	.37	.33	.31	.20	1.00							
B6	.45	.26	.47	.29	.38	.20	.51	.44	.51	.50	.42	.33	.38	1.00						
B7	.61	.32	.59	.29	.47	.28	.62	.55	.64	.58	.53	.41	.38	.47	1.00					
B8	.34	.19	.36	.19	.33	.20	.39	.38	.36	.29	.35	.25	.38	.46	.42	1.00				
B16	.54	.36	.54	.32	.42	.27	.58	.52	.57	.53	.48	.44	.33	.46	.60	.37	1.00			
B10	.57	.28	.57	.28	.47	.31	.60	.55	.57	.54	.48	.43	.39	.39	.43	.37	.49	1.00		
B12	.49	.29	.46	.29	.47	.32	.55	.52	.53	.49	.48	.42	.41	.45	.44	.46	.42	.67	1.00	
B17	.28	.07	.26	.12	.17	.09	.27	.22	.27	.22	.15	.23	.29	.24	.11	.20	.21	.36	.31	1.00

Table 10. Final "DCB" Subscale

B3	Praise the quality of the vendor's system and service to co-workers
B9	Praise the vendor to someone who asks about it at a cocktail party
B13	Provide leads on prospective customers to the vendor
B18	Praise the vendor and system to prospective buyers who seek information
B21	Serve as a current-customer reference to potential buyers of the system
B23	Support and defend the vendor in meetings with senior management
B26	Support and defend the vendor in discussions with subordinates
B27	Welcome prospective buyers of the system to see it in operation
B28	Give the vendor the benefit of the doubt when problems come up

expect them to perform less reliably as indicators. It must be emphasized that this study did not provide a rigorous, controlled test comparing positive and negative forms of identical behaviors. Thus this finding must be regarded as merely suggestive of a potential future research direction.

A second observation is that behaviors that are good indicators of satisfaction tend to be "relational" in nature. They refer primarily to aspects of the customer's relationship with the vendor, rather than with the customer's use or exploration of the system. Of the twenty good behaviors, eleven make no reference at all to the system. Six of the nine behaviors which do refer to the system describe instances of information sharing about the system to the vendor or to sales prospects. On the other hand, many of the less consistent indicators of satisfaction focused on system use, system exploration, or internal procedures affected by the system (e.g., *change procedures to protect against undesirable effects of using the system, read the system documentation to learn more about the system, look for new ways to use the system, ask questions about the system to learn as much as possible about it, change procedures to take advantage of unique capabilities of the system, try out unfamiliar features of the system to find new and better ways to use it*). None of the twenty best indicators of satisfaction have the system as the *exclusive* target of the behavior. This finding is consistent with previous IS research which has found weak relationships between user satisfaction and system use.

6.2 Limitations

The sample includes managers of varying organizational levels, work experience, product experience, and direct system use. The sample was drawn randomly from the sample frame. Thus the sample provides generalizability to a broad spectrum of managers. The sample frame was limited, however, to medium sized commercial banks and thus future research should include other industries and firms of different sizes in order to improve the generalizability of the conclusions. Data were provided from a single survey instrument thus raising the possibility of common method error. In addition, all data here were obtained through self-report of behavioral intentions and are therefore subject to bias due to social desirability. Future studies should add objective data collection methods and should include measures of actual behavior.

6.3 Implications for Future Research

Future research can be profitably directed toward understanding the antecedents of behaviors which did not turn out to be strong indicators of satisfaction. Such behaviors, while not necessarily linearly related to satisfaction, may nevertheless play an important role in buyer-seller relationships and ultimate system success. The theory of planned behavior can continue to provide the underpinning for such research, either employing multiple-act behavioral criteria, as in this study, or by focusing on the prediction of individual behaviors by measuring the influence of behavioral beliefs, attitudes, social norms and perceived control. Both research strategies would seem to play an important part in addressing a continuing dilemma in IS research — that of specifying the performance-related behaviors that link information system related antecedents to social and economic impacts (Doll and Torkzadeh 1991).

The reliability and discriminant validity of two subscales (SWITCH and CONTEND) were judged to be unsatisfactory in their current form. While the procedure for collecting behaviors employed in this study was comprehensive and systematic, it was not guided by an *a priori* specification of these two domains. Therefore it is not surprising that these two constructs are inadequately covered by the items used to measure them. Future research may be usefully directed toward generating and evaluating additional items to effectively measure these two constructs. The DCB scale, on the other hand, appears to possess

adequate measurement properties and may be used in its current form as a behavioral scale measuring customer satisfaction with vendor provided information services.

Following the further refinement of the behavioral subscales, subsequent research can then investigate the antecedents of these behavioral patterns. Since "relational" rather than system-oriented behaviors were found to be stronger indicators of VPIS Satisfaction, research from the fields of relationship marketing and buyer-seller relationships may provide guidance to subsequent research. A number of variables such as *trust, cooperation, relative influence, relative dependence,* and *quality of communication* have been suggested as potential antecedents of buyer-seller relationship outcomes (Anderson and Narus 1990). Exploratory research in this area indicates that the most robust antecedents of relationship behaviors fall into three categories: *mutual reliance, power,* and *history* (Heckman 1993). In the Theory of Reasoned Action and Theory of Planned Behavior, such variables are considered *external* variables, since their effects on behavior are proposed to be mediated by attitudes and beliefs. Future research should also explore these mediating effects of attitude on behavioral outcomes.

6.4 Implications for Practice

The behavioral subscales developed in this study have the potential to be used as diagnostic instruments for vendors of information products and services. A multidimensional behavioral assessment of satisfaction can complement the direct assessments of beliefs and attitude which are more commonly used, thus providing richer and more reliable measurements. Specific behavior patterns such as DCB and SWITCH will probably be of interest to vendors in and of themselves due to the important profit implications associated with these behaviors. Finally, the findings should suggest to practitioners the relative importance of social versus technical factors in creating satisfactory relationships with their customers. Recruitment, training and evaluation of staff members should be based as much on their ability to establish positive and cooperative relationships with customers as on their technical excellence. Such employees will be able to encourage the discretionary collaborative behaviors so strongly related to Customer Satisfaction with Vendor-Provided Information Services.

7. REFERENCES

Ajzen, I. "Attitude Structure and Behavior." In A. R. Pratkanis, S. J. Breckler, and A. G. Greenwald (Editors), *Attitude Structure and Function.* Hillsdale, New Jersey: Lawrence Erlbaum Associates, 1988.

Ajzen, I. "The Theory of Planned Behavior." *Organizational Behavior and Human Decision Processes,* Volume 50, 1991, pp. 179-211.

Ajzen I., and Fishbein, M. "Attitude-Behavior Relations: A Theoretical Analysis and Review of Empirical Research." *Psychological Bulletin,* Volume 84, Number 5, 1977, pp. 888-918.

Ajzen, I., and Fishbein, M. *Understanding Attitudes and Predicting Social Behavior.* Englewood Cliffs, New Jersey: Prentice Hall, 1980.

Anderson, J. C., and Narus, J. A. "A Model of Distributor Firm and Manufacturer Firm Working Partnerships." *Journal of Marketing,* Volume 54, January 1990, pp. 42-58.

Bailey, J. E., and Pearson, S. W. "Development of a Tool for Measuring and Analyzing Computer User Satisfaction." *Management Science,* Volume 29, Number 5, May 1983, pp. 530-545.

Baroudi, J.; Olson, M. H.; and Ives, B. "An Empirical Study of the Impact of User Involvement on System Usage and Information Satisfaction." *Communications of the ACM,* Volume 29, Number 3, March 1986, pp. 232-238.

Campbell, D. T., and Fiske, D. W. "Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix." *Psychological Bulletin,* Volume 56, 1959, pp. 81-105.

DeLone, W. H., and McLean, E. R. "Information Systems Success: The Quest for the Dependent Variable." *Information Systems Research,* Volume 3, Number 1, March 1990, pp. 60-95.

Doll, W. J., and Torkzadeh, G. "The Measurement of End-User Computing Satisfaction." *MIS Quarterly,* Volume 12, Number 2, 1988, pp. 259-274.

Doll, W. J., and Torkzadeh, G. "Test-Retest Reliability of the End-User Computing Satisfaction Instrument." *Decision Sciences,* Volume 22, Number 1, Winter 1991, pp. 26-37.

Etezadi-Amoli J., and Farhoomand, A. F. "On End-User Computing Satisfaction." *MIS Quarterly,* Volume 15, Number 1, March 1991, pp. 1-4.

Fishbein, M., and Ajzen, I. "Attitudes Towards Objects as Predictors of Single and Multiple Behavioral Criteria." *Psychological Bulletin,* Volume 81, Number 1, 1974, pp. 59-74

Fishbein, M., and Ajzen, I. *Belief, Attitude, Intention and Behavior.* Reading, Massachusetts: Addison-Wesley, 1975.

Galletta, D., and Lederer, A. "Some Cautions on the Measurement of User Information Satisfaction." *Decision Sciences*, Volume 20, 1989, pp. 419-438.

Goodhue, D. "IS Attitudes: Toward Theoretical and Definitional Clarity." In L. Maggi, R. Zmud, and J. Wetherbe (Editors), *Proceedings of the Seventh International Conference on Information Systems*, San Diego, California, 1986, pp. 181-194.

Greenwald, A. G. "Why Are Attitudes Important?" In A. R. Pratkanis, S. J. Breckler, and A. G. Greenwald (Editors), *Attitude Structure and Function.* Hillsdale, New Jersey: Lawrence Erlbaum Associates 1988.

Gronroos, C. "Strategic Management and Marketing in the Service Sector." Research Report Number 8, Swedish School of Economics and Business Administration, 1982.

Heckman, R. *Customer Satisfaction with Vendor-Provided Information Services: Antecedents and Behavioral Consequences of User Attitudes.* Unpublished Doctoral Dissertation, University of Pittsburgh, 1993.

Ives, B.; Olson, M. H.; and Baroudi, J. J. "The Measurement of User Information Satisfaction." *Communications of the ACM*, Volume 26, Number 10, October 1983, pp. 785-793.

Jackson, D. N., and Paunonen, S. V. "Construct Validity and the Predictability of Behavior." *Journal of Personality and Social Psychology*, Volume 49, Number 2, 1985, pp. 554-570.

Liljander, V., and Strandvik, T. "Estimating Zones of Tolerance in Perceived Service Quality and Perceived Service Value." Swedish School of Economics and Business Administration Working Papers, # 247, September 1992.

Melone, N. P. "A Theoretical Assessment of the User-Satisfaction Construct in Information Systems Research." *Management Science*, Volume 36, Number 1, January 1990, pp. 76-91.

Miller, J. "Information Systems Effectiveness: The Fit Between Business Needs and System Capabilities." In J. I. DeGross, J. C. Henderson and B. R. Konsynski (Editors), *Proceedings of the Tenth International Conference on Information Systems*, Boston, 1989, pp. 273-288.

Mulaik, S. *The Foundations of Factor Analysis.* New York: McGraw-Hill Book Company, 1972.

Nguyen, N. "Un Modele Explicatif de l'Evaluation de la Qualite' d'un Service: Une Etude Empirique." *Recherche et Application en Marketing*, Volume 6, Number 2, 1991, pp. 83-97 (cited in Liljander and Strandvik 1992).

Nunnally, J. C. *Psychometric Theory.* New York: McGraw-Hill Book Company, 1978.

Oliver, R. L. "Measurement and Evaluation of Satisfaction Process in Retail Settings." *Journal of Retailing*, Volume 57, Fall 1981, pp. 25-48.

Parasuraman, A.; Zeithaml, V.; and Berry, L. "A Conceptual Model of Service Quality and Its Implications for Future Research." *Journal of Marketing*, Fall 1985, pp. 41-50.

Parasuraman, A.; Zeithaml, V.; and Berry, L. "SERVQUAL: A Multiple-Item Scale for Measuring Consumer Perceptions of Service Quality." *Journal of Retailing*, Volume 64, Number 1, Spring 1988, pp. 12-40.

Schewe, C. D. "The Management Information System User: An Exploratory Behavioral Analysis." *Academy of Management Journal*, Volume 19, Number 4, 1976, pp. 577-590.

Srinivasan, A. "Alternative Measures of System Effectiveness: Associations and Implications." *MIS Quarterly*, Volume 9, Number 3, September 1985, pp. 243-253.

Swan, J. E. "Consumer Satisfaction Research and Theory: Current Status and Future Directions." In R. L. Day and H. K. Hunt (Editors), *International Fare in Consumer Satisfaction and Complaining Behavior*, Indiana University, Bloomington, 1983, pp. 124-129.

Treacy, M. E. "An Empirical Examination of a Causal Model of User Information Satisfaction." Working Paper, Center for Information Systems Research, Sloan School of Management, Massachusetts Institute of Technology, 1985.

Wicker, A. W. "Attitudes versus Actions: The Relationship of Verbal and Overt Behavioral Responses to Attitude Objects." *Journal of Social Issues*, Volume 25, 1969, pp. 41-78.