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Article *in* Information Technology and Management · January 2003

DOI: 10.1023/A:1021828517151

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Consumer Satisfaction for Internet Service Providers: An Analysis of Underlying Processes

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Abstract. A key managerial challenge, of interest to academics and practitioners alike, is the assessment and management of customer satisfaction. In this paper, we examine the underlying processes involving consumer satisfaction and switching patterns among ISPs using different satisfaction models, including the expectations-disconfirmation model, the attribution model, and an affective model. Our results indicate that the satisfaction levels of ISP consumers are generally relatively low, despite the fact that consumer expectations of ISPs are also low, reflecting "mediocrity" in the marketplace. In addition, consumers attribute their dissatisfaction to ISP indifference and believe that managing dissatisfaction is within the control of the ISP. Moreover, "affective" factors play an important role in satisfaction processes and switching behavior. Customer service including technical support and responsiveness of service staff is an important "determinant" factor in ISP selection. We suggest that as the ISP market matures, service providers that pay attention to affective factors and to building "relationships" with their customers will have a competitive advantage in the marketplace of the future.

1. Introduction

"Consumer satisfaction" is the central element of the marketing concept. As Pfaff [35] eloquently stated: "There is but little doubt that the maximization of consumer satisfaction is considered by most to be the ultimate goal of the market economy". If "consumer satisfaction" is the fundamental element of the market economy, it is important to understand satisfaction and dissatisfaction processes among Internet Service Provider (ISP) consumers to better market ISP services to them, develop new products, manage competitive forces, provide supporting services, and price services. Having understood underlying satisfaction processes, it would further be important to develop conceptual and empirical guidelines that can be applied in the management and marketing of ISPs.

There has been relatively little research (e.g., [1,30,41,50]) on consumer satisfaction in ISP markets. Most of this research has been practitioner-oriented survey research or conjecture, and none has rigorously studied underlying satisfaction processes. Various theoretical paradigms exist in consumer satisfaction literature that may give us a better understanding of the satisfaction processes of ISP consumers and the "position" of ISPs in consumers' minds. In this paper, we examine consumer satisfaction, switch-

ing behavior, and consumer perceptions of ISP consumers using four different models to obtain a more thorough understanding of the processes involved.

1.1. ISP overview

In the past year, there has been an exponential growth in the use of the Internet, and Internet service providers have rushed into the marketplace to service this demand. Studies conducted by the International Data Corporation (IDC) show that Internet Service Provider revenue reached $10.7 billion in 1998 and the figure is expected to reach $37.4 billion by 2003, a growth rate of 28% a year. America Online was the leading ISP in 1998, holding a 23% market share. Other leading providers include MSN, Earthlink, MCI and NetZero. The industry continues to undergo consolidation and the number of Internet service providers is considerably less than it was a few years ago [14]. Estimates for the total number of Internet users vary. As of April 1999, the IDC places the figure near ninety six million with the number in the active universe for one week in April 1999 at 41.9 million. These numbers are expected to rise.

Though the number of Internet providers has decreased, competition remains high, especially in the area of new technology. Firms must find ways to attract new customers, perhaps by luring them away from competitors, and retaining those that they already have. In this effort, many Internet service providers have begun to specialize in providing services that cater to specific market segments. For example, Earthlink now offers a new anti-spam feature and special options for businesses, while NetZero caters to the price conscious segment. Some firms have taken customer service one step further by outsourcing the Internet connection and purchasing links. These firms provide customer service only, and rely on the companies they purchase links from, to provide the connection and the hardware [6].

The industry is undergoing technological changes as well. Most Internet subscribers are equipped with a 28.8 kbps modem. Cable Modem access and Digital Subscriber Lines (DSL) allow customers to cruise the Internet at speeds up to 7 Mbps [38] providing much faster Internet access and page loading. Recent estimates place the total number of cable access subscribers near one million. Changes such as cable modem access and digital subscriber lines have begun to make smaller Internet service providers realize that the future may be out of their reach unless they can secure portals to connect to high speed lines. The competitive nature of the industry makes this option difficult.

Any Internet company should focus on attracting as many new customers as possible, as well as retaining the customers that they already have. Some firms have focused on customer service to accomplish this while recent technological innovations may seem to suggest that the focus should be placed on the speed of the connection. The number of ads per page and their relative complexity adds to the time it takes for a page to load. While this may be a source of discontent for some users, service providers like NetZero offer free access to those who are willing to tolerate a large number of ads on their web page.

In addition to examining underlying satisfaction processes, this paper also examines those attributes that lead to customer satisfaction among ISP consumers. In addition, we examine the behavior of those individuals that have switched ISP's and those that have not. We also analyze service perceptions towards various ISPs, and the "position" that competing ISPs occupy in consumers' minds. Internet Service Providers have concentrated on attracting new subscribers (for example, with price incentives and free minutes of online access) but have placed relatively little emphasis on strategies to retain customers. While attributes like speed and price intuitively appear to play an important role in customer satisfaction and retention, fundamental questions remain about the validity of these assumptions and the significance of other attributes as we move across market segments, as well as into a more competitive marketplace.

Understanding what these attributes are and how they rank in importance to the consumer can be helpful in determining how to tailor services to accommodate various market segments that exist in the online community. It can also lead to more focused marketing campaigns and help ISP's better allocate resources to areas important to the consumer. With a clear knowledge of customer satisfaction processes, ISP's should better be able to keep current customers satisfied as well as attract new customers.

1.2. Objectives and organization of paper

A key managerial challenge, of interest to marketing academics and practitioners alike, is the assessment of the extent of customer satisfaction and dissatisfaction among consumers. The anecdotal examples in the introductory section illustrate the importance of customer satisfaction in a market that is in a growth phase. Our objective in this paper is to examine consumer satisfaction processes and switching patterns among ISPs using different models of consumer satisfaction. Specifically, we develop an understanding of the processes involved by using the expectations-disconfirmation model, the attribution model, affective models and a competitive positioning model.

Previous research on customer satisfaction toward ISP services is sparse and this study fills the gap. Our results indicate that the satisfaction levels of ISP consumers are relatively low, as are the expectation levels of consumers, suggesting mediocrity in the marketplace. Results of the attribution models indicate that consumers perceive their dissatisfaction to be due to the negligence or indifference of the ISP. This suggests that ISPs need to improve customer perceptions and their service quality. The affective model suggests that ISPs should pay attention to the affective component, which may be enhanced through "relationship" marketing and personal attention to consumer needs. The results of factor analysis suggest that there are three strategic dimensions that are determinant in influencing customer choice of an ISP: "customer service", "ease of use" and "pricing". The competitive positioning model confirms our findings that the customer satisfaction levels are low; there is a significant opportunity for a new entrant positioned strongly on the key determinant factors of customer service and ease of use.

This paper is organized as follows: section 2 discusses the models of consumer behavior that we use; section 3 outlines the research methodology; and section 4 provides

the results of our study. Section 5 presents the conclusions and limitations of the present study and offers directions for future research.

2. Models of customer satisfaction

2.1. The expectations-disconfirmation model

We first analyze consumer satisfaction and switching behavior of ISP consumers using the expectations-disconfirmation model. The expectations-disconfirmation model is based on a paradigm that has dominated consumer satisfaction/dissatisfaction research for many years [10]. According to this paradigm, consumers are believed to form expectations about a service prior to purchasing the service [31]. The notion of consumers forming expectations is derived from expectancy theory [44], and is generally defined as a consumers' beliefs that a service (in this case, the ISP) possesses certain desired attributes. Subsequent post-purchase usage then reveals to the consumer, the actual performance of the service. The consumer then compares this post-purchase evaluation with the expectations held prior to purchase. If the product performed better than expected (perceived actual performance > expected performance), positive disconfirmation is expected to occur. This leads to consumer satisfaction, strengthens consumers' attitudes towards the service, and results in positive word-of-mouth. If however, in the consumers' evaluation, the product performs worse than expected (perceived actual performance < expected performance), negative disconfirmation occurs. This may weaken future dispositions towards purchasing the product, and the consumer may search for other products [8]. If the product performs as expected (perceived actual performance = expected performance), the judgment of the consumer is labeled "simple confirmation" [34].

Two processes at two different time periods affect the expectations-disconfirmation process. Expectations may be affected by marketer dominated stimuli such as advertising, or by non-marketer dominated experiences such as word-of-mouth, or prior service experience [29]. Disconfirmation on the other hand, follows from consumers' perceptions of the usage experience. The disconfirmation of expectancies paradigm has found wide support in past research [2,25,31].

A separate expectations effect that is thought to operate independently of the disconfirmation effect has been hypothesized by Oliver [31,32]. According to this line of thought, this expectation effect works by providing an anchor for future satisfaction judgments. Oliver and DeSarbo [34] have found some support for this argument. They observed this effect as the third most significant effect in consumers' satisfaction judgments after a disconfirmation effect and performance effect, although they add that the expectation effect may interact with the disconfirmation effect in the common direction of influence. The disconfirmation effect is thought to be the stronger in satisfaction judgments, perhaps because the expectation effect may decay over time [32]. Disconfirmation effects are sometimes believed to originate from the emotional experiences associated with usage [43]. Positive emotions associated with positive disconfirmation increase the likelihood of a satisfaction judgment, while negative emotions associated

with negative disconfirmation decreases it. Simple confirmation maintains the adaptation level [34]. Moreover, performance plays a significant role as an input to the disconfirmation process [3].

More recently, Oliver [33] found that satisfaction with individual attributes of a product (such as menu features for an ISP) have a direct independent effect on satisfaction judgments that are not fully reflected in either expectations-disconfirmation or affective processes. In addition, Spreng et al. [40] discuss the role played by information in overall satisfaction. They define "information satisfaction" as "a subjective satisfaction" judgment of the information used in choosing a product. They suggest that expectations develop from marketer-controlled information sources such as advertising or personal selling, and these "marketer-supplied standards" influence satisfaction judgments.

2.2. *The attribution model*

Attribution theory has been found to be very useful in explaining consumers' post-purchase behavior. The works of Kelley [21] and Weiner [46] have substantially influenced attribution research. Attribution theory has been used more in dissatisfaction/complaining behavior models than in satisfaction models. According to attribution theory, consumers are viewed as processors of information, actively looking for reasons to explain why a purchase outcome turned out the way it did [11,51].

More specifically, consumers tend to search for causes of purchase successes or failures and attribute these successes or failures using a three dimensional schema, generally represented as follows (see [12,24,34]):

(1) Locus of Causality (internal or external) – The purchase outcome can be attributed either to the consumer (internal) or to the marketer or something in the environment or situation (external).

(2) Stability (stable/permanent or unstable/temporary) – Stable causes are thought not to vary over time, while unstable causes are thought to fluctuate and vary over time.

(3) Controllability (volitional/controllable or nonvolitional/constrained) – Both consumers and firms can either have volitional control over an outcome or be under certain uncontrollable constraints.

These dimensions are generally thought to be dichotomous [46], although there has been some discussion of them being perceived on a continuum [11]. A consumer's response to a situation depends on the attributions he/she makes. The most common use of the causal dimensions above have been in understanding consumers' post-purchase behavior following product failure (dissatisfaction). While there has been research [24,37] that has examined the effects of one or two of these dimensions, Folkes [11] analyzed all three causal dimensions and consumers' reactions to attributions based on those dimensions. With regard to locus of causality, it was found that consumers felt that they deserved a refund and apology more when failure was externally attributed (firm related) than when it was internally attributed. Similarly, firm-related attributions elicited more

feelings of anger and desire to hurt the firm than internal attributions. In such cases consumers also resorted to more negative word-of-mouth [37]. Such feelings of anger towards the firm were heightened when the responsiveness of the firm to the problem was considered less than adequate and hence resulted in more negative word-of-mouth. Under conditions where the consumer perceived poor responsiveness by the firm, they were less likely to complain to the firm and more likely to use negative word-of-mouth to express their dissatisfaction [37]. Stability and locus affected whether consumers expected future product (service) failure [11,24] and whether they preferred a refund. If the cause was perceived to be stable, consumers expected the service to fail again in the future, and hence preferred a refund. Consumer attributed causes of failure were also considered to be less stable (more changeable) than firm attributed causes. Hence refunds were preferred to exchanges when causes for failure were attributed to the firm. As far as controllability was concerned, more anger was elicited when consumers perceived the cause of failure to be controllable by the firm and hence were more likely to seek revenge.

Attribution models have, in the past been more useful in predicting consumers' reactions when they are dissatisfied than in explaining the satisfaction process itself. However, Folkes [11] and Richins [37] have obtained some evidence that support a relationship between locus of causality (internal or external attributions) and satisfaction judgments. The results, especially Folkes', show that the locus of causality dominates satisfaction judgments and that satisfaction is associated more with internal than with external attributions. In addition, Oliver and DeSarbo [34] found that consumers were more satisfied when they felt they were responsible for the decision leading to satisfaction (internal locus of casualty) than when they did not feel they were responsible for the decision.

2.3. Affective models

While most models of consumer satisfaction have implicitly assumed a cognitive process in explaining consumers' satisfaction judgments, it has relatively recently been recognized that affective (emotional) variables may play an important role in consumers' post-purchase responses. To a large extent, this recognition has been fueled by the realization that cognitive models have been inadequate in explaining all satisfaction phenomena. Affect, defined as a "valenced feeling state" [4], may provide a richer understanding of the "experiential" aspects of satisfaction, and sometimes serve as a primary motivator of post-purchase processes.

Westbrook [47] found that consumer satisfaction judgments were, in addition to purchase-specific factors, a function of the affective responses of the consumer after the purchase. Westbrook [48] used Izard's [17] taxonomy of affective experience and determined that independent positive and negative affective dimensions directly influenced consumers' satisfaction judgments, complaint behavior, and word-of-mouth activity. The affective responses of the subjects were found to account for a significant variance in these post-purchase phenomena, over and above traditional cognitive expla-

nations. Moreover expectations-disconfirmation effects (described earlier) did not mediate these relationships. Westbrook and Oliver [49] investigated the interrelationship between consumption emotion and consumer satisfaction. Their findings indicate that past satisfaction measures do not adequately represent the affective component associated with consumption.

More recently, Oliver [33] found that satisfaction or dissatisfaction with individual attributes of a product or service were significantly related to positive and negative affect, respectively. This effect was in addition to independent cognitive (expectations-disconfirmation) and affective effects, suggesting more complex processes in consumer satisfaction judgments than previously thought. Mano and Oliver [27] further confirmed that satisfactions responses contain both affective and cognitive components, and that even for highly-involving utilitarian products (such as ISPs), affective responses, such as "pleasantness" and "arousal" affect satisfaction judgments.

2.4. Competitive positioning model

A key element of marketing strategy and product design is the competitive positioning of firms. Positioning is the act of designing the image of the firm's offering so that target customers understand and appreciate what the product stands for in relation to its competitors. Each firm within a set of competitive offerings is thought of as occupying a certain position in a customer's "mind". Accordingly, each firm will want to promote those few differences that will appeal most strongly to its target market. The end result of positioning is the successful creation of a market-focused value proposition; a clear statement of why the target consumer should buy the product [23]. Perceptual mapping refers to techniques used to represent this product space graphically. When selecting a strategic positioning vis-a-vis the competition, it is important that the core benefit proposition provides the strategic positioning and reflects the basic benefits that customers use to summarize their perception of products [45]. Positioning research is suited for product life-cycle analysis, market segmentation and structure [28], firm evaluation, advertising evaluation, store image research [26], and brand switching research. For a good discussion of product positioning and the use of factor analysis to study it, see Kohli and Leuthesser [22], and Hauser and Koppelman [16].

We have two objectives with regard to competitive positioning: (1) to identify the key strategic dimensions that are determinant in influencing customer choice of an ISP, and (2) to determine how the ISP firms are positioned relative to the competition. No matter how important a product attribute is, if firms are not perceived to differ on that attribute, then the attribute will not be influential in customers' choice decisions. Often, the underlying determinant aspects of a brand/firm are latent, unobservable constructs that are composed of a number of observable attributes. Perceptual mapping techniques can be useful in uncovering these latent dimensions.

With respect to ISPs, the perceptual map provides information on the combination of attributes that consumers prefer most, what market segments exist in a market and which are the most viable, and whether "gaps" exist in a market that can support a

new ISP. From a marketing strategy, positioning is critical for an ISP. Not only must an ISP deliver the benefits that the customer needs, but it must also do so better than competition. Further, to achieve the goals of sales and long-run profitability, an ISP must ensure that the product, its services, its pricing and its communication are consistent and deliver the key strategic benefits that are revealed in the perceptual maps.

3. Research methodology

The focus of this study is to understand satisfaction processes and to identify the drivers of customer satisfaction for ISPs. In the first phase of the research, focus groups were established with about 20 representative customers. The objective was to identify the key factors that were considered to be important (salient) attributes that influence consumer satisfaction. Participants were asked to list the product and service factors that were of importance to them. After a review of the focus group results, variables were identified for a comprehensive survey questionnaire. In the second phase of the research, the survey questionnaire was pre-tested with a pool of 40 customers.

The questionnaire was revised based on the feedback and administered to a randomly selected sample of 75 customers, designed to include a broad range of users. Prior to recording their responses, the meaning of the eight variables of primary interest in determining the drivers of customer satisfaction were carefully explained to the participants. A within-subjects design was used to determine consumer satisfaction, switching behavior, service perceptions and ISP positions in the participant pool. We received 59 usable questionnaires.

Participants were asked to list their current ISP, and their past ISP (if they had one). After some general questions on usage patterns, participants were asked to rate their perceptions of the importance of the eight attribute variables selected in the earlier process. They were then asked to rate their current and past ISPs on those attributes.

Details on the measures of the eight variables used in this study are given below:

(1) *Response time* is a measure of the time taken to fix disruptions of service at the customer end. All indicators suggest that timely response and uninterrupted service are critical in today's competitive environment.

(2) *Technical support* is the extent of service provided by the ISP with regard to setting up, troubleshooting and repairing software problems. Good error diagnosis and correction procedures are critical to minimizing the disruption of service at the customer end.

(3) *Price* refers to what the consumer pays for the access service, and includes initial and ongoing costs.

(4) *Payment method* is the flexibility with respect to payment options offered by the ISP. These options include sending a check by mail, payment by credit card, and payments made by direct withdrawal from a bank account. The last two options require that the consumer allow access to credit card numbers and bank account numbers to the ISP. Even with advanced encryption techniques many consumers

remain wary of sending sensitive information over the Internet. With respect to this variable, most firms in our study are not that differentiated and we do not expect this variable to a differentiating factor.

(5) *Responsiveness of service* is the extent to which the ISP is sensitive to the needs of the customer. It reflects non-technical aspects of vendor service and the extent to which the ISP handles complaints effectively, but does not include "response time".

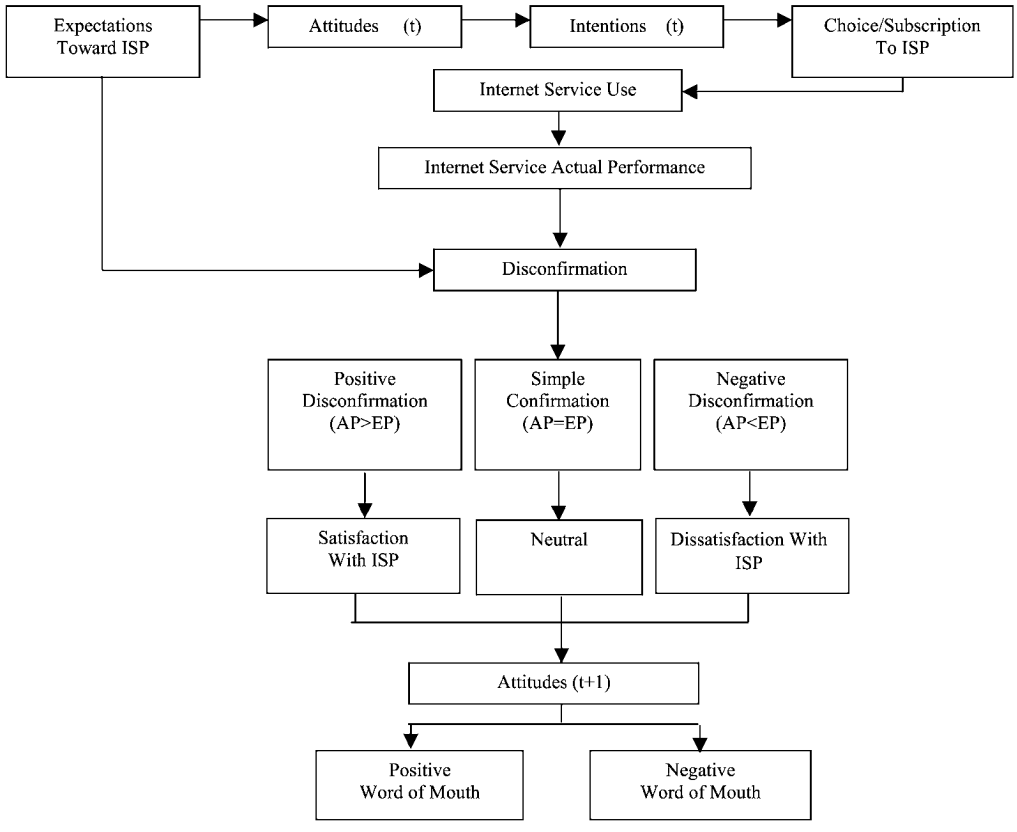
(6) *Banner ads* are promotional advertisements that appear on a web page. A web page owner will typically allow a related banner ad on the web page in exchange for the owner's ads being placed on another web page. Banner ads vary in size and may include animation. The more complex the banner, the longer it will take for the page to load. In this paper, we are concerned with how this affects satisfaction judgments.

(7) *Ease of software installation* is the simplicity with which the Internet service is installed. With increasing complexity of software, customers may find installation tedious and cumbersome. Often this can be a multi-part process including a registration page and preferred method of payment page. Thus, the installation measure assesses the ease with which customers have installed the software on their computers.

(8) *User friendliness of software* is an attribute that deals with user satisfaction with the start page design and navigation tools. While an ISP may offer its own navigation tools, consumers are free to switch as many browsers as are available to download from the Internet.

General satisfaction measures of participants' current and past ISPs were then solicited. After this, a detailed analysis of the satisfaction processes of the participants was carried out. To examine satisfaction processes using the expectations disconfirmation model (see figure 1), a procedure similar to that used by Oliver [31], Bearden and Teel [2] and Oliver and DeSarbo [34] was used to measure participants' expectations and disconfirmation processes for both their current and past ISPs. To examine satisfaction processes using the attribution model (see figure 2), a procedure similar to that used by Folkes [12] and Oliver and DeSarbo [34] was used to analyze the attribution processes of the participants when they were confronted with dissatisfaction with their previous ISP.

To examine satisfaction processes using the affective model, a procedure and scale similar to the one used by Crites et al. [5] was used. Crites et al. [5] reported and tested a 19-item scale to assess affective and cognitive properties of overall attitudes. They also tested the ability of the scales to differentiate between attitudes that based primarily on affective versus cognitive information. It should be noted that a complete analysis of affective processes that lead to satisfaction is beyond the scope of this paper. Rather, we restricted ourselves to examining the affective and components of overall customer satisfaction, to gain a basic understanding of the relative importance of the different routes to satisfaction or dissatisfaction (see [9]). Finally, respondents were asked to provide demographic information on their occupation, income, level of education, age, and gender. Table 1 summarizes the demographic profile of the respondents. Two-tailed



Note: AP= Perceived Actual Performanve
EP= Expected Performance
t=Time

Figure 1. Expectations-disconfirmation model.

paired sample tests were used to compare expectations and disconfirmation processes of past and present ISPs. Similar tests were used to compare "locus", "stability" and "control" factors for the attribution model, and affective and cognitive components for the affective model.

We use factor analysis to identify the "determinant" factors of customer satisfaction and to arrive at a competitive positioning map. Factor analysis is essentially a data reduction technique in which the objective is to represent the original set of attributes in terms of a smaller number of underlying dimensions or factors. After the factors have been identified, individual brand ratings on these factors are used to position the brands in a perceptual space. Consider i firms of Internet service providers, which we wish to place on a competitive positioning map. Each of the i firms is rated on j attributes by n respondents. The resulting input data form a matrix containing ni rows and j columns. In this study, six firms ($i = 6$) are rated on eight attributes ($j = 8$). Eight attributes were identified from the results of the focus group study, and are: *response time, technical*

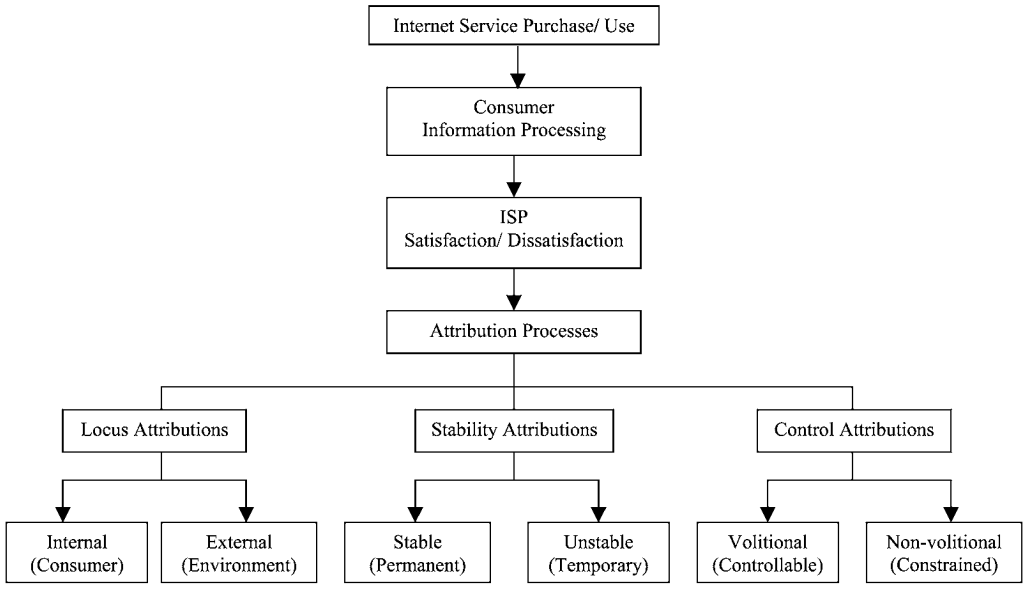


Figure 2. Attribution model.

Table 1
Demographic profile of participants.

Number of usable responses	59	
Gender	Male	46%
	Female	54%
Age group	15–20	12%
	21–26	75%
	27–32	8%
	33–38	3%
	39–44	0%
	> 44	2%
Current education level	Some high school	0%
	Completed high school	2%
	Some college	42%
	Completed college	15%
	Some graduate school	34%
	Completed graduate school	7%

support, price, payment method, responsiveness of service, banner ads, ease of software installation, and *user friendliness of software*. The six firms that are of interest are AOL, Earthlink, MSN, NetZero, AT&T and Pacbell. Fifty-nine individuals ($n = 59$) each rate all firms on the eight attributes (Likert-like scales containing seven rating points are employed for such measures). The first step is the generation of a correlation matrix for the j attributes. The correlation matrix would reveal the sets of attributes that are

correlated. Any conclusions about the existence of meaningful factors ultimately must be supported by theoretical considerations. Having identified the factors, the brands are then evaluated on these factors by computing an overall "factor score". The factor score is simply the average of all the attribute evaluations contributing to that factor, which may be averaged over n individuals for the brand's overall position on the map. For more details on factor analysis, see Rummel [39] and Harman [15]. Firms are then positioned by factor scores.

4. Results and discussion

4.1. Expectations-disconfirmation model

Consumers' overall satisfaction with their current ISP was significantly higher than their satisfaction with their previous ISP (M's = 5.36 vs. 3.52, $t(1, 24) = 3.85$, $p = 0.001$). This is not surprising, as the relatively low satisfaction of consumers with their previous ISP is what prompted them to switch ISP's.

There was no significant difference between consumer expectations of their current ISP and disconfirmation of those expectations ($t = 0.535$). This lack of either positive or negative disconfirmation is quite interesting, as it indicates only "simple confirmation" among consumers (see table 2). In other words, consumers' perceptions of their current service provider can best be thought of as neutral, and indicates a lack of significant satisfaction, much less "delight" among ISP consumers. In other words, there is considerable potential for the improvement of the services provided by ISP's, and the consequent consumer "delight".

A significant difference between participants' expectations of their previous ISP and the consequent disconfirmation was, however revealed (M's = 5.32 vs. 4.08, $t(1, 24) = 2.509$, $p = 0.019$). This disconfirmation is negative, and indicates dissatisfaction among consumers. This is consistent with earlier results, and explains why consumers switched ISP's.

Table 2
Expectations-disconfirmation model.

Variable	M	t	df	P-level (2-tailed)
Current ISP satisfaction	5.36	3.846	24	0.001
Previous ISP satisfaction	3.52			
Current ISP expectations	5.28	0.535	24	0.598
Current ISP disconfirmation	5.08			
Previous ISP expectations	5.32	2.509	24	0.019
Previous ISP disconfirmation	4.08			
Current ISP expectations	5.28	−0.118	24	0.907
Previous ISP expectations	5.32			

There was no difference between participants' expectations of their current ISP and their previous ISP ($t = -0.118$). This again is interesting, as it may indicate that consumers, while dissatisfied with their previous ISP, did not really expect significantly better service from their new ISP. Rather, the reason for their switching may be explained by their motivation to avoid the bad experiences with their previous ISP, rather than their motivation to gain a better experience with another ISP. Again this indicates mediocrity in the marketplace, and leaves open the possibility of a competitor entering the market with a superior service, and consequently gaining considerable competitive advantage.

4.2. Attribution model

Dissatisfaction with their previous ISP was rated by consumers (see table 3) as being overwhelmingly due to the company (external), rather than to themselves (internal) (M's = 4.78 vs. 2.96, $t(1, 22) = -2.939$, $p = 0.008$). This highly significant difference in means is interesting, as it may suggest that the consumers perceive the ISP to be almost negligent in providing the service, as opposed to perceiving a general weakness or deficiency in the industry. Moreover, further support for this perception is obtained from consumers' responses to the "control" issue. Dissatisfaction with the previous ISP was attributed to being under the control of the company rather than the consumer (M's = 5.21 vs. 3.04, $t(1, 23) = -4.138$, $p = 0.0004$). In other words, subjects felt that the ISP in question could have provided better service (i.e., it was under their control to do so), but simply did not strive to do so. Two implications can be drawn from this finding. The first is that, at the very least, the management of consumer perceptions of most ISPs can be improved. If ISPs are able to convince consumers that some of their dissatisfaction towards the ISP is not under the control of the company, consumers may be more understanding, and less likely to switch service providers. Second, there appears to be tremendous potential opportunities for an ISP that is able to minimize some of the causes for this dissatisfaction.

4.3. Affective model

Affective (emotional) ratings were significantly more positive (see table 4) for current vs. previous ISP's (M's = 0.735 vs. -0.145, $t(1, 24) = -2.275$, $p = 0.032$). In addition, cognition ratings were significantly more positive for current vs. previous ISP's

Table 3
Attribution model.

Variable	*M*	*t*	*df*	*P*-level (2-tailed)
Previous ISP dissatisfaction due to self (internal)	2.96	2.939	22	0.008
Previous ISP dissatisfaction due to ISP (external)	4.78			
Previous ISP dissatisfaction controllable by company	5.21	4.138	23	0.00003
Previous ISP dissatisfaction controllable by consumer	3.04			

Table 4
Affective model.

Variable	*M*	*t*	*df*	*P*-level (2-tailed)
Previous ISP affect Current ISP affect	−0.145 0.735	2.275	24	0.032
Previous ISP cognition Current ISP cognition	0.147 1.18	3.014	24	0.006
Previous ISP attitude Current ISP attitude	−0.22 1.1	2.881	24	0.008
Previous ISP affect Previous ISP cognition	−0.15 0.15	2.626	24	0.015
Current ISP affect Current ISP cognition	0.735 1.18	6.073	24	0.00003

(M's = 1.18 vs. 0.147, $t(1, 24) = -3.014$, $p = 0.006$). These results are interesting, because they indicate that both emotional and cognitive factors drive, or are affected by consumer-switching behavior. The emotional component may be influenced by interpersonal dealings with the ISP, reputation and image of the ISP, etc., while the cognitive component may be influenced by technical superiority, speed of ISP, etc. Not surprisingly, overall attitude was significantly more positive for the current ISP vs. the previous ISP (M's = 1.10 vs. −0.220, $t(1, 24) = -2.881$, $p = 0.008$).

We also conducted pair-wise comparisons of the affective and cognitive components both before and after the switching behavior. If there is no significant difference before, and a significant difference after switching (or vice-versa), one could conclude that the switch had either been driven by, or had resulted in an improvement of, one or the other component. This would have been an interesting result with potential implications for ISP management. However the components were found to be significantly different in magnitude both before and after switching behavior (at the 0.05 and 0.0005 levels, respectively).

Affect and cognition ratings for both previous and current ISP's were highly correlated ($r = 0.959$). On ratings of their current ISP, participants rated affect as less positive than cognition ratings (M's = 0.735 vs. 1.18, $t(1, 24) = -6.073$, $p = 0.0003$). A similar pattern was revealed in ratings for previous ISP; affect was less positive than cognition ratings (M's = −0.145 vs. 0.147, $t(1, 24) = -2.626$, $p = 0.015$). This may indicate that there is potential for all ISP providers to build stronger emotional links to their customers, and thus minimize switching behavior in the event of a cognitively based reason for dissatisfaction.

4.4. Exploratory factor analysis

A series of tests was conducted to determine if the data were suitable for factor analysis (see [42]). Bartlett's sphericity test indicates that the distribution is ellipsoidal and

Table 5
Pair-wise correlations among ISP attribute variables[a].

	RT	TECS	PRICE	PAY	RESP	BADS	EASE	FRIEND
RT	1.00	0.509	0.074	0.069	0.504	0.272	0.309	0.282
TECS	0.509	1.00	0.109	0.094	0.647	0.220	0.247	
PRICE	0.074	0.109	1.00	0.407	0.207	0.027		
PAY	0.069	0.094	0.407	1.00	0.355			
RESP	0.504	0.647	0.207	0.355				
BADS	0.272	0.220	0.027					
EASE	0.309	0.247						
FRIEND	0.282							

[a]RT = response time, TECS = technical support, PAY = payment method, RESP = responsiveness of staff, BADS = banner ads, EASE = ease of software installation and FRIEND = user friendliness of software.

Table 6
Factor matrix after varimax rotation.

Variable	Factor 1 *Customer Service*	Factor 2 *Ease of Use*	Factor 3 *Pricing*
Response time	0.722	0.357	−0.154
Technical support	0.806	0.178	−0.046
Price	0.039	0.137	0.774
Pay	0.145	0.195	0.822
Responsiveness of service staff	0.848	0.035	0.281
Banner ads	0.568	−0.070	0.205
Ease of installation	0.165	0.850	0.198
User friendliness of software	0.055	0.892	0.176
Variance explained by each factor	2.266	1.739	1.492

therefore amenable to data reduction [7]. The Kaiser–Meyer–Olkin measure of sampling adequacy is 0.85, indicating a high-shared variance and a relatively low uniqueness in variance [18].[1] Next, we examine the pair-wise correlations between variables. An examination of the correlation matrix in table 5 reveals that the attributes "response time to inquiries," "technical support" and "representative friendliness" are correlated. Likewise, "price" and "payment methods" are correlated. Another set that is correlated is the variable pair consisting of "ease of software installation" and "user friendliness of software". Since the correlations among variables is not small, we can conclude that factor analysis is an appropriate method for analyzing this data.

We performed exploratory factor analysis on the data set using the maximum likelihood method. The maximum likelihood method of estimation is most efficient resulting in smaller standard errors. Using a stopping rule of eigenvalues of greater than one, we find that the number of factors should be three. Table 6 shows the factor matrix after

[1] We also plotted the latent roots obtained from matrix decomposition. It indicated one sharp break, suggesting the appropriateness of factor analysis [42].

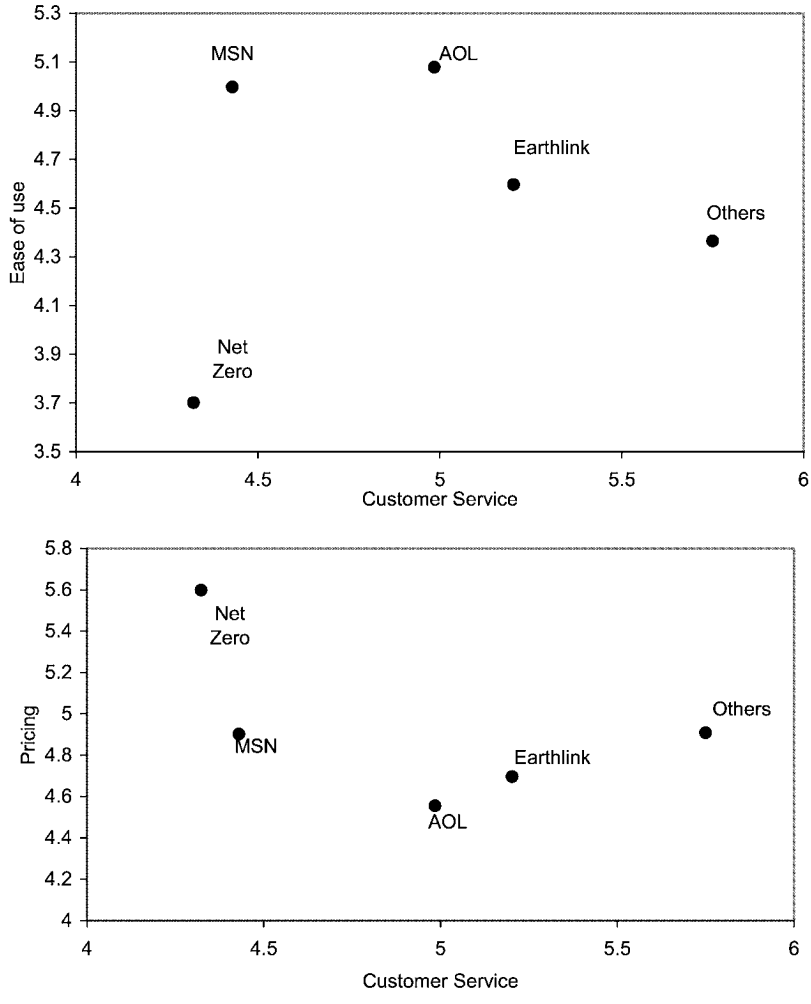


Figure 3. Competitive positioning map.

rotation by the varimax method. Factor 1 consists of three variables: "response-time to inquiries", "technical support" and "responsiveness of service staff", and pertains to *Customer Service*. Factor 2, comprises two variables: "ease of software installation" and "user friendliness of software" and represents the *Ease of Use* of the software. Factor 3, consisting of "price" and "payment methods" represents the *Pricing Policy* of the Internet service provider.

In sum, factor analysis reveals that there are three strategic dimensions that describe Internet Service Providers. These are *Ease of Use*, *Pricing* and *Customer Service*. We are interested in developing a product-positioning map to help with respect to service design. We consider for analysis of the product positioning, four major firms in Southern California, namely AOL, Earthlink, MSN and NetZero. The remaining firms are classified as "others". As seen in figure 3, Earthlink is perceived to be the best on

Customer Service while NetZero is perceived to be quite poor relative to competition on this dimension. These results are consistent with past survey results [30], where Earthlink was preferred over competition by customers valuing service and user-friendliness. Consistent with these results, the Telechoice performance survey also rated AOL as being poor on the *Customer Service*. With respect to *Pricing*, NetZero is perceived to be the best. This is as expected since NetZero does not charge an access fee. There is not a significant differentiation between MSN, AOL and Earthlink on the *Pricing* dimension. On the *Ease of Use* dimension, AOL and MSN are well positioned while NetZero is relatively weak on the *Ease of Use* dimension. It is notable that the "others" fair well on the *Customer Service* dimension. These results are consistent with the anecdotal perceptions of the ISP's gleaned from discussions with several users, and also support the contention [19] that smaller firms are focusing on customer service and on building personalized relationships with their customers.

A clear implication from a marketing strategy perspective is that a firm that differentiates itself from competition by offering superior customer support and reliable service will have a sustainable strategic advantage in the market place. In a growth environment such as the ISP market, only the ISPs that differentiate themselves on the key strategic dimensions are likely to survive and be profitable in the long run.

5. Conclusions and limitations

The results of this study contribute to the recent, albeit relatively sparse body of knowledge about consumption behavior towards ISP services. It also clarifies a number of past findings on satisfaction towards ISP services that have been based on simplistic, often unscientific satisfaction constructs. No theoretically founded, academic research has so far examined satisfaction processes in the ISP market. The few articles (e.g., [20,36]) that have addressed issues on the topic have been based mostly on anecdotal evidence and lack a theoretical premise. For example, Kavanagh's [20] conclusions are based on a "convenience" focus group study, and on the opinions of unscientifically selected "consultants". Radosevich's [36] conclusions, while based on a more rigorously designed study conducted over 2 weeks by a consulting firm, has no theoretical framework. Consequently, the findings have limited generalizability, and their reliability and validity are unclear. In this paper, we have examined consumer satisfaction of ISP services, using various validated theoretical frameworks, in order to get a better understanding of the underlying processes involved. We believe that an understanding of the processes involved should provide better inputs for the management and marketing of ISPs in the future.

The results obtained indicate among other things, that satisfaction levels of ISP consumers are relatively low, as evidenced only by the "simple confirmation" of their expectations, even for the market leaders. This is an anomaly in today's highly competitive marketplace, and leaves current providers vulnerable to competitors, who may focus on better service. Moreover, consumer expectations of ISPs are relatively low, which makes confirmation of those expectations rather easy. This makes the low sat-

isfaction results especially disappointing, and suggests mediocrity in the marketplace. In addition, attribution model results indicate that consumers perceive their dissatisfaction to be due to the negligence or indifference of the ISP, and also perceive that this is within the control of the ISPs. This may imply that ISP providers may need to change consumer perceptions, their own service quality, or both. The results also suggest that both affective (emotional) and cognitive factors affect switching behavior. ISPs should pay attention to this affective component, that may be enhanced through "relationship" marketing and personalized responsiveness to consumer problems. Overall, it appears that ISPs have neglected the affective component, preferring instead to market their services like "commodities". We suggest that an ISP that does not think of their service as a "commodity" will have a tremendous advantage in the marketplace.

It is likely that the reason for the mediocre "satisfaction scenario" described above may be due to the fact that the ISP market is in the early stages of its product life cycle. Consequently, service providers are more interested in staking out and gaining market share, rather than consolidating their position, through building strong relationships with customers. This is a shortsighted strategy, because, as the market matures, the providers who have nurtured these relationships are likely to be the market leaders. There is no dearth of ISPs entering the market, and we suggest that existing ISPs understand underlying satisfaction processes and act upon them, if they hope to survive in the highly competitive marketplace of the future. This study suggests that there is considerable potential for the improvement of services provided by most ISPs.

This study also seriously questions the erroneous assumption by ISPs that consumers base their selection of their ISP solely on specification attributes and price. The results indicate that this is not always the case. Results suggest that there are strategic dimensions that are determinant in influencing customer choice of an Internet service provider: customer service, ease of use and pricing. The results underscore the importance of customer service consisting of attributes such as response time to inquiries, technical support and responsiveness of service staff.

The results of the competitive positioning model indicate Earthlink is perceived to be offering the highest levels of customer service while America Online is perceived to be good on the "ease of use" dimension. NetZero has an advantage with respect to the "pricing" dimension. The results suggest that there is a significant opportunity for a new entrant positioned strongly on the key determinant factors of "customer service" and "ease of use", dimensions current major players are neglecting as indicated by the results.

It may be that specification attributes and price are "salient" factors, but other factors such as customer service and ease of use are "determinant". These results support recent findings (e.g., [1,19]) on the importance of service quality and relationships on purchase decisions, and also provide an explanation for seemingly unexplainable switching behavior. From a marketing strategy perspective, our results suggest that an ISP that differentiates itself from competition by offering superior customer service and reliable service will have a sustainable strategic advantage in the market place.

In a growth environment such as the ISP market, only the ISPs that differentiate themselves on the key strategic dimensions are likely to survive and be profitable in the long run. Smaller ISPs that provide personalized services and build strong relationships with consumers are likely to carve lucrative niches for themselves, at the expense of the larger providers. On a similar vein, analysts believe that ISPs will need to offer a more complete package of services to satisfy their customers [19]. This will include high technology and personnel costs, and is likely to result in an increase in mergers among ISPs.

This paper contributes theoretically to the literature by providing a rigorous understanding of the underlying processes involved in consumer satisfaction with ISPs. The paper also provides a better understanding of the underlying processes involved in switching behavior in case of dissatisfaction with an ISP. No such rigorous analysis exists in MIS literature so far. This is especially so in the study of satisfaction processes for ISPs. Managerially, this paper makes a contribution by helping an ISP manager determine where the strengths and weaknesses of their service and marketing strategy lie. In the past, the manager may just have been aware of the customer satisfaction ratings of his/her ISP service, but not have known exactly where the problem lies, or what he/she should do to correct for it. The findings of this paper help a manager by providing a framework for analyzing satisfaction problems and strategy. The expectations-disconfirmation model is a "basic" framework for determining if the basic expectations of a consumer, based on his/her past experiences as well as marketplace conditions and communications, are met. Affective models go beyond basic expectations, and provides the manager with an understanding of determinant and differentiating factors, that in a crowded marketplace, may be a "competitive advantage" of the ISP. Attribution theory helps the manager understand consumer processing in case of dissatisfaction, and consequently provides a framework to correct for it.

The generalizability of these results should not, however, be overstated. One reason may be that this study is based on reported rather than actual behavior. Another limitation may be the fact that participants in this study come from a single geographical region and country (Southern California, USA), where a fair assumption can be made that ISP consumers are relatively more knowledgeable and experienced with ISPs than consumers in other geographical regions or countries. It is possible that consumer satisfaction may be higher and switching behavior lower in other geographical regions. No doubt, further empirical research needs to be carried out in order to obtain a more comprehensive picture of the ISP market. A possibility would be to examine the moderating effects of product class knowledge on satisfaction and switching behavior. It is also possible that different results may be obtained for ISPs selected for personal or professional use. It is therefore not clear how generalizable the findings of this study are to various situations. It seems to be a reasonable conclusion, however, to say that the results of this study serve to provide a considerably more thorough understanding of the current ISP market, the underlying satisfaction processes and the constructs involved. Additionally, the findings provide a better picture of consumer service perceptions and the positions of various providers in consumer minds.

Acknowledgements

The authors acknowledge the invaluable research assistance of Lorie Silva in the preparation of this manuscript.

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