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**HOW CUSTOMER ATTRIBUTES AFFECT RETENTION, LOYALTY
INTENTION AND SATISFACTION FOR CONTINUOUSLY PROVIDED
SERVICES**

by

Terence Yongtao Zhang

A thesis submitted to the Faculty of Graduate Studies and Research
in partial fulfillment of the requirements for the degree of
Master of Engineering in Telecommunications Technology Management

Department of Systems and Computer Engineering

Carleton University

Ottawa, Canada, K1S 5B6

May 11, 2005

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ABSTRACT

This research examines how customer attributes affect retention, loyalty intention and satisfaction for continuously provided services. Data from 294 high-speed Internet users were used to test three sets of hypotheses that link customer demographic and profile attributes to customer retention, loyalty intention and satisfaction. The results suggest that (i) the income, education and age of the users who remain with the service provider are higher than those who cease being customers; (ii) loyalty intention is higher for customers with high income than for those with low income; and (iii) satisfaction with the service provider is higher for customers with high education than for those with low education. This research is important for two reasons. First, the results shed light to whether or not there is value in segmenting service markets based on customer attributes. Second, the results can help service providers develop actions plans to improve customer retention.

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1 INTRODUCTION

The objective of this research is to examine how customer attributes affect retention, loyalty intention, and satisfaction for continuously provided services. The customer attributes examined in this research include three demographic characteristics, income, education, and age, and two customer profiles, service usage and account duration.

In a continuously provided service such as utilities, telephony, and Internet, customers enter into formal relationships with service providers and subsequently consume or use the service (continuously or intermittently) for an extended time (Bolton, 1999). Continuously provided services are characterized by long-term customer-firm relationships. Customers continuously evaluate the service and the relationships with service providers based on service experience and transactions, and adjust their satisfaction, loyalty intentions and behavioral decisions (Boulding, 1993).

Customer retention, loyalty, and satisfaction are important goals for continuous service providers on their way to superior economic success in competitive markets (Gerpott, 2001; Reichheld, 1996). The research literature focuses on identifying company side factors, value drivers, or quality attributes that affect customer retention, loyalty intention, and satisfaction (Gerpott, 2001; Kordupleski, 2003; Gale, 1994). However, little is known about how customer attributes are related to retention, loyalty intention and satisfaction for continuously provided Internet services. This lack of understanding motivated this research.

This research is important for at least three reasons. First, this research provides insights on continuously provided services in the field of telecommunications. Continuous service providers have embraced relationship marketing with its focus on maximizing customer lifetime value (Bell, 2002; Johnson, 2004). Improving customer retention, loyalty intention and satisfaction have been identified as the key factors for service providers to maximize customer life time value and achieve profitability and growth (Reichheld, 1996; Reichheld, 2003).

The second reason that this research is important is that the results of this research can shed light to whether or not there is value in segmenting markets based on customers attributes.

Third, the results of this research can help service providers develop effective action plans to improve customer retention, a key driver of service provider profitability. .

This research makes at least three contributions. First, this research can improve sales forecasts made by service providers. Second, this research can improve the way that service providers identify attractive target markets and design market mixes to address them. Third, this research can help improve the return on investment of the functions responsible for managing customer relationships in service provider organizations.

The rest of the thesis is organized as follows. Chapter 2 provides the literature review.

Chapter 3 presents the research model and develops the hypotheses. Chapter 4 specifies the research method used to test the hypotheses. Chapter 5 identifies the results from testing the hypotheses. Chapter 6 discusses the results and their implications. Chapter 7 provides the conclusions of this research, describes the limitations, and makes suggestions for future research.

2 LITERATURE REVIEW

Since the relevant empirical studies on retention, loyalty intention and satisfaction for continuously provided service are scattered, we review literatures for both goods and service markets. Section 1 provides a summary of relevant research constructs that have been used in empirical studies. Section 2 reviews the empirical studies on the customer retention and its antecedents. Section 3 reviews the empirical studies on customer loyalty intention and its antecedents. Section 4 reviews the empirical studies on customer satisfaction and its antecedents. Section 5 provides lessons learned form reviewing the literatures

2.1 Relevant research constructs

Table 1 provides the constructs that have been used in empirical research relevant to customer retention, loyalty intention, and satisfaction. The studied industry, definition of the construct, and whether the construct was used at behavior, intention or perception level were identified.

Table 1. Research constructs relevant to retention, loyalty intention and satisfaction

Construct	Study	Studied Industry	Measurement	Behavior/Intention /Perception
Purchase Behavior	Morwitz, 1992	<ul style="list-style-type: none"> • Automobile • PC 	Actual behavior of buy/not buy in a specified time span after the survey time	Behavior
Purchase Intention	Morwitz, 1992	<ul style="list-style-type: none"> • Automobile • PC 	Self-stated intention to buy or not buy certain goods/service in a defined period of time	Intention
Purchase Probability	Juster, 1996	n/a	Self-stated likelihood to purchase certain goods/service in a defined period of time	Intention
Departure Probability	Israel, 2003	<ul style="list-style-type: none"> • Automobile insurance 	Statistical percentage of customers that terminate the contractual relationship with the service provider	Behavior
Retention	Bolton, 1998	<ul style="list-style-type: none"> • Wireless Phone Service 	Duration of customer – firm relationship subsequent to survey time	Behavior
Service usage	Bolton, 1999	<ul style="list-style-type: none"> • Wireless Phone 	Consumption of the service	Behavior

		Service	subsequent to the survey time	
Retention	Gerpott, 2001	<ul style="list-style-type: none"> • Wireless Phone Service 	Customer's self-stated likelihood to extend or immediately terminate the contractual relationship with the service provider	Intention
Loyalty	Gerpott, 2001 Kim, 2004	<ul style="list-style-type: none"> • Wireless phone service 	Customer's favorable attitude toward the service provider	Intention
Loyalty	Kim, 2004	<ul style="list-style-type: none"> • Wireless phone service 	Customer's self-stated intention to stay with the carrier, and intention to recommend the carriers to others	Intention
Service Loyalty	Bloemer, 1998	<ul style="list-style-type: none"> • Entertainment • Health care • Fast food • Supermarket 	Combination of repeated purchase behavior and favorable attitude toward the service providers	Behavior/Intention
Loyalty	Reichhold, 2003	Cross industries	Customer's willingness to make an investment or personal sacrifice in order to strengthen the relationship with the firm	Intention
Satisfaction	Gerpott, 2001 Kim, 2001	<ul style="list-style-type: none"> • Wireless Phone Service 	Customer's overall evaluation of the performance of the service compared	Perception

			with expectation	
Satisfaction	Anderson, 1993	<ul style="list-style-type: none"> • Financial service 	Customer's overall assessment of the service performance	Perception
Service quality	Cronin, 1992	<ul style="list-style-type: none"> • n/a 	Customer's perception of the service performance	Perception
Service quality	Bloemer, 1998	<ul style="list-style-type: none"> • Entertainment • Health care • Fast food • Supermarket 	Customer's comparison of service expectations with actual performance perceptions	Perception
Customer perceived value	Korduplesky, 2003	<ul style="list-style-type: none"> • Telecom Service, 	Customer's overall value assessment (worth what paid for) of the goods/service compared with competition	Perception

Purchase behavior has usually been used for goods or transaction-based service market (Young, 1998; Morwitz, 1992). Retention has usually been used for service market (Bolton, 1998), referring to either customer's behavioral intention or actual behavior. Due to the difficulty of obtaining customer behavior data, retention has usually been measured as behavioral intention rather than actual behavior.

Loyalty has been used for both goods and service markets referring to customer's favorable attitude towards the company, behavior of repurchasing the same goods/service, or the combination of attitude and behavior (Bloemer, 1998).

Satisfaction and quality perception have been used for both goods and service markets referring to customer's perception of the performance of a goods/service with or without the comparison with the expectation (Anderson, 1993; Bloemer, 1998)

Gale (1994) proposed the concept of customer value (customer/market perceived value of a product/service compared with competition) and approved by PIMS cross-industry database that customer perceived value is positively related to company financial performance including market share and profitability.

In this research, for convenience purpose, we use customer satisfaction, perceived value and service quality interchangeably, bearing in mind that satisfaction is the main construct among the three.

Both customer intention level construct (e.g. loyalty) and perception level construct (e.g. satisfaction, quality and perceived value) are multi-dimensional. Table 2 identifies the dimensions for loyalty, value, satisfaction, and quality that have been identified in empirical studies.

Table 2. Relevant constructs and their dimensions

Construct	Dimensions	Empirical study	Studied industry
Loyalty	<ul style="list-style-type: none"> • Word of mouth • Purchase intention • Price sensibility • Complaint behavior 	Bloemer, 1998	<ul style="list-style-type: none"> • Entertainment • Health care • Fast food • Supermarkt
Satisfaction	<ul style="list-style-type: none"> • Price • Network quality • Customer service 	Gerpott, 2001	Mobile communications
Satisfaction	<ul style="list-style-type: none"> • Payment equity (price perception) • Quality performance 	Bolton, 1999	Mobile communications
Customer Perceived Value	<ul style="list-style-type: none"> • Quality • Price 	Korduplesky, 2003	Telecom Service
Service Quality	<ul style="list-style-type: none"> • Reliability • Responsiveness • Assurance • Empathy • Tangible 	Bloemer, 1998	<ul style="list-style-type: none"> • Entertainment • Health care • Fast food • Supermarkt
Quality	<ul style="list-style-type: none"> • Billing • Tech support 	Korduplesky, 2003	Telecom Service

	<ul style="list-style-type: none"> • Repair • Customer service • Product features 		
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2.2 Customer retention and its antecedents

For continuously provided service, once customers have been acquired, their long-term relationship with the service providers are of greater importance to the success of the service providers than they are in other industries (Gerpott, 2001) due to the economics of retention (Reichheld, 1996). Small increases in retention rates have a dramatic effect on profits of a company because the cost of retaining an existing customer is less than the cost of acquiring a new customer, existing customers tend to up-by, and there are efficiencies in dealing with existing customers rather than new customers (Reichheld, 1990).

For continuously provided service, customer retention takes the format of customer's behavior of extending the contractual relationship with the service provider or maintaining the future service usage level. For transactional-based service or goods market, customer retention takes the format of repeated purchase from the same service providers or vendors (Bolton, 1998; Bolton, 1999).

The two most important determinants of customer retention (or repeated purchase) behavior are customer loyalty (or repeated purchase) intention and satisfaction level (Rust, 1997; Bolton, 1998). Satisfaction level affects subsequent retention (or repeated purchase

behavior) by influencing subsequent loyalty (or repeated purchase) intentions (Rust, 1997).

An individual's intent to perform certain behaviour is the single best predictor of the individual's subsequent behaviour (Fishbein, 1975). In fact, the positive association between customer's purchase intention and purchase behaviour has been identified by many empirical studies (Morwitz, 1997). And intention-based forecast has been used by market research and companies to predict subsequent customer behaviour and company future revenue flow (Morwitz, 1992).

However, following studies have found that neither loyalty (repeated purchase) intention nor satisfaction level is perfect predictor of customer's subsequent retention (repeated purchase) behaviour. The deviation may be caused by company or industry side factors, customer side factors, predicting methods, intent measurement bias, or the interaction between above factors.

Morwitz (1997) found that the predictive validity of purchase intention on subsequent purchase behaviour is affected by customer's ability of representing current intention and ability of predicting how the intention will change over time. The abilities are determined by customers' past experience of the product/service and general knowledge level.

Bolton (1998) developed and tested a dynamic model for the duration of the contractual relationship between customers and service providers, where duration depends on

customer's subjective expected value of the relationship. The expected value is continuously updated following an anchor-adjustment procedure, where accumulative satisfaction serves as the anchor that is updated with new information obtained during subsequent service experience.

Bolton (1999) found that customer's subsequent usage of a continuously provided service is affected not only by his/her overall satisfaction level of the service, but also by his/her previous usage level of the service. High previous service usage level will lead to high subsequent usage level given overall satisfaction level.

Morwitz (1992) and Young (1996) identified that the relationship between purchase intention and purchase behaviour varies across demographic and product usage-based segments. They also developed methods on how to identify customer demographic/psychological variables moderating the variation, and how to improve the intention-based forecast.

Mittal (2001) presents a model relating satisfaction rating and repurchase behaviour. It was identified that customer attributes can introduce variation in the satisfaction-repurchase link by affecting satisfaction threshold or tolerance. Older customers usually have lower threshold which lead them to be more loyal to the product/service they have been used. Less educated customer might also be less likely to switch brand/service (Ratchford, 1999).

Rice (2003) identifies that demographic characteristics including income, age and education affect mobile phone and Internet users' drop-out rate. Higher income, older age, and higher education are related to lower drop-out rate.

Israel (2003) identified that there is a tenure dependency in consumer-firm relationships for continuously provided service. Customer's departure probability drops as the past account duration increases.

Reichheld (2003) pointed out the customer retention may come as the result of customer being held hostage rather than the result of true loyalty. Switching barrier has been identified to have impact on both customer retention and customer loyalty intention (Gerpott, 2001; Kim, 2004).

2.3 Customer loyalty intention and its antecedents

Reichheld (2003) defined customer loyalty intention as a customer's willingness to make an investment or personal sacrifice in order to strengthen the relationship with the firm. For continuously provided service, customer loyalty intention may take the format of customer's intent to stay with the service provider, or intent to recommend the service to others. For transaction-based service or goods market, customer loyalty intention may take the format of repeatedly purchase the same goods/service, or recommend the service/goods to others (Bloemer, 1999).

The loyalty of company's customer base has been identified to be key to company's growth and profitability (Reichheld, 1996; Reichheld, 2003). For continuously provided service, customer loyalty is even more critical due to the retention economics (Bolton, 1998).

Customer's overall satisfaction level is the most important determinant of customer loyalty intention (Gerpott, 2001). However, following studies have found that customer loyalty intention and customer satisfaction are not congruent. Other factors also affect customer loyalty intention, sometimes even make satisfaction irrelevant.

Boulding (1993) proposed and estimated a process model where customer's behaviour intent is determined by his/her perceived service quality, which in turn depends on prior expectation and the most recent service transaction. Both intent and service quality perception is subject to an continuously updating procedure. Bolton (1998) built upon the model and approved that for continuously provided service, a customer's intent to remain the relationship with the service provider is anchored around cumulative satisfaction level, which is continuously adjusted with transaction experience. It was identified that there is latency in satisfaction-intention link.

In a longitudinal study, Mazursky (1989) asked respondents to indicate satisfaction and intention rating toward and antitheft alarm system. Two weeks later, these same respondents were asked their behavioural intentions toward the same system. Results

show that satisfaction ratings obtained in the first time period were predictive of the intentions in the first period, but not predictive of the intentions in the second period. Using this result as a basis, the author concluded that the satisfaction-intention link decays rapidly, and that overtime, satisfaction does not affect intentions directly.

Gerpott (2001) pointed out that a customer with low satisfaction level of the service may have high loyalty intention because he/she has trust on the service provider and is confident that the service will be improved in the future. On the other hand, a customer with high satisfaction level of the service may have low loyalty intention because he/she does not have confidence on the service provider.

Kim (2004) identified that customer's perceived cost and risk of switching service provider has mediating effect on satisfaction-loyalty link. Low-satisfaction customers may have high loyalty intention because of the high perceived switching barrier, and vice versa.

2.4 Customer satisfaction and its antecedents

Customer satisfaction has been usually referred to by literatures as overall or cumulative satisfaction which is an overall evaluation based on the total purchase and consumption experience with a goods/service over time (Anderson, 1993), as opposed to transaction-based satisfaction which is an immediate post-purchase evaluation to the most recent transactional experience with the firm (Oliver, 1993). Customer satisfaction and

quality perception have been used interchangeably by literatures bearing in mind that the construct of service quality has evolved to include all the attributes (e.g. price) that fall under the umbrella of satisfaction. In recent years, value perception has been proposed to replace satisfaction construct to take into consideration that customers always perceive the performance of a goods/service in comparison with competition (Kordupleski, 2003). In this research, we use quality perception, satisfaction, and value perception interchangeably for convenience purpose.

A customer's overall satisfaction is determined by the customer's evaluation of individual quality attributes or value drivers of the goods/service. Managers are interesting in identify what drives customer perceived value or satisfaction to make resource allocation decisions (Griffin, 1993). Researchers are interested in identifying antecedents of satisfaction (Oliver, 1993).

Kordupleski (2003) identified that value drivers have different impact weight in determining the overall satisfaction level. Mittal (1999) identified that attribute weights in determining the overall satisfaction shift over time. To identify quality dimensions or value drivers and their relative importance on overall satisfaction has been so far the main stream of customer satisfaction literature (Gerpott, 2001).

However, as pointed out in Boulding (1993), quality perception is a temporal construct subject to constant updating. Customers update their perceptions based on their prior perception and recent transactions with the goods/service provider. During the cumulative

procedure, customers' past experience and knowledge have impact on the outcome of the accumulation. We've found no empirical studies examining the relationship between customer attributes and satisfaction level with the exception of Mittal (2001). Mittal (2001) identified that customers' satisfaction threshold or tolerance level not only impacts their behavior intent but also impact the satisfaction rating itself. Customers that have low satisfaction threshold or high tolerance level tend to rate the satisfaction level high, or vice versa.

Table 3 provides a summary of the empirical studies that identify the antecedents of purchase/retention behaviour, purchase/loyalty intention, and satisfaction.

Table 3. Empirical studies on the antecedents of retention, loyalty intention and satisfaction

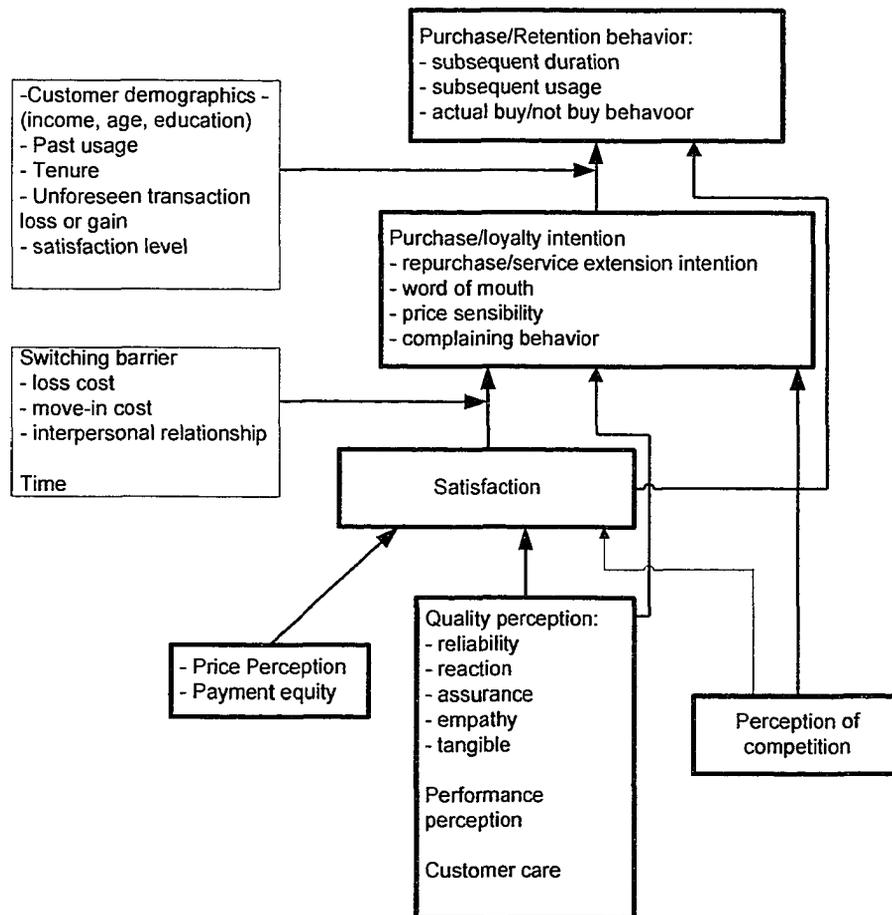
Impacting construct	Impacted construct	Empirical study	Studies industry
Satisfaction level, past experience, new loss, new gain	Subsequent duration of customer-firm relationship	Bolton, 1998	Mobile phone service
Satisfaction level, past service usage, payment equity	Subsequent service consumption	Bolton, 1999	Mobile phone service
Customer demographic characteristics	Purchase intent - purchase behavior link	Morwitz, 1992 Morwitz, 1997	Automobile, PC
Past experience	The relationship between intent and late behavior	Fazier, 1981	n/a

Demographic characteristics including income, age, and education	The gap between continuing/drop-out users	Rice, 2003	<ul style="list-style-type: none"> • Internet • Mobile phone service
Customer satisfaction	Actual switching and recommendation behavior as well as behavior intention	Anderson, 1993	Financial service
Satisfaction	Repurchase intent	Mittal, 2002	Automobile
Satisfaction threshold, response bias	Satisfaction-repurchase behavior link	Mittal, 2002	Automobile
Satisfaction	Purchase intent	Mazursky, 1989	Automobile, PC
Time	Satisfaction-intention link	Mazursky, 1989	Automobile, PC
Dimensions of Service quality	Dimensions of service loyalty	Bloemer, 1998	<ul style="list-style-type: none"> • Entertainment • Health care • Fast food • Supermarkt
Loyalty intention	Retention intention	Gerpott, 2001	Mobile phone service
Satisfaction	Loyalty intention	Gerpott, 2001 Kim, 2004	Mobile phone service
Switching cost, switching barrier	Satisfaction-loyalty intention link	Kim, 2004	Mobile phone service

Figure 1 summarizes the findings in empirical studies relevant to customer behaviour, intention, and perception for goods and service markets. There is a 2-stage causal relationship between customer purchase/retention behaviour, purchase/loyalty intention,

and satisfaction. Satisfaction is driven by perceptions of price and quality attributes. Perception of competition also affects satisfaction/value perception. The relationship between purchase/retention behaviour is moderated by customer demographic and profile factors. The relationship between purchase/loyalty intention and satisfaction/value perception is moderated by switching barrier and time.

Figure 1. Summary of the literature review



2.5 Lesson learned

From the literature review, we learn the following:

1. Literatures on continuously provided service are very few. What are the specific antecedents of customer retention, loyalty intention and satisfaction for continuously provided services remains unknown.
2. Given that customer retention, loyalty intention, and satisfaction are the outcome of cumulative procedures depending on company/industry factors, customer side factors, and their interactions, very few empirical studies have examined the relationships between customer side factors and retention, loyalty intention and satisfaction.
3. Due to the difficulties of obtaining customer behavior data, empirical studies on customer loyalty intention and retention have usually relied on intention data rather than behavior data. The ignorance of the deviation between behavior intention and actual behavior limits the value of the research to management practices.

3 RESEARCH MODEL AND HYPOTHESES

This chapter is organized into three sections. The first section describes the research model used to anchor the hypotheses. The second section develops the hypotheses that were tested as part of this research. The third section provides a list of the hypotheses.

3.1 Research model

Figure 2 shows the research model used to anchor the hypotheses tested in this research study. The model relates customer attributes to customer retention, loyalty intention, and satisfaction.

Customer retention refers to a customer's actual behavior of extending or terminating the contractual relationship with the service provider (Bolton, 1998).

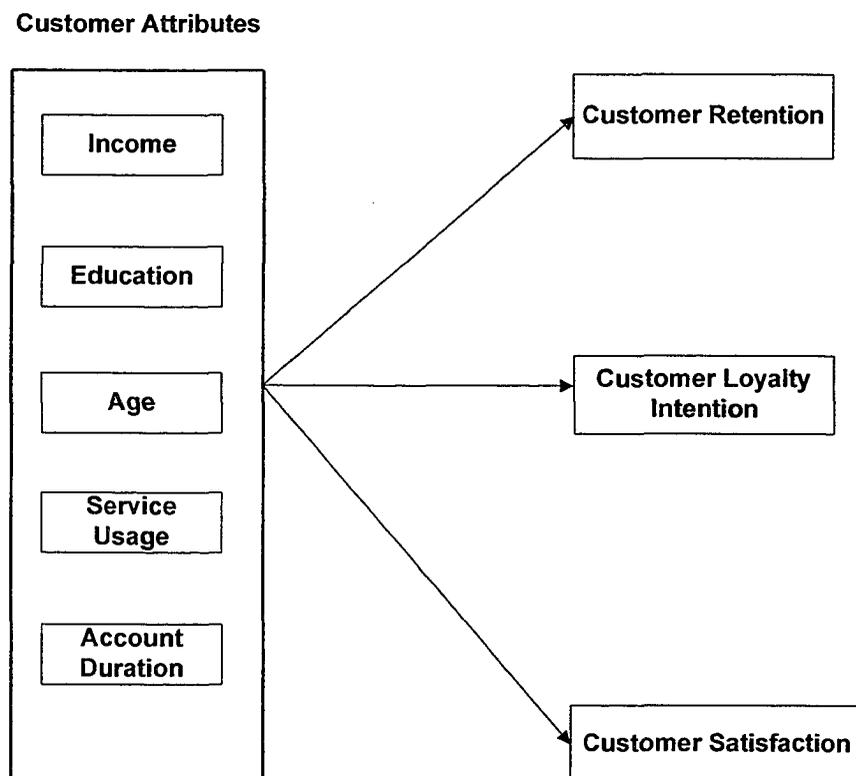
Customer loyalty intention refers to a customer's self-stated intention to stay with the service provider over a given period of time (Gerpott, 2001).

Customer satisfaction refers to a customer's evaluation of the overall performance of the service provided by the firm relative to the competition (Kordupleski, 2003).

The model shown in Figure 2 builds on Gerpott's model (Gerpott, 2001). Gerpott's model

identifies the antecedents of retention, loyalty intention, and satisfaction in the mobile cellular telecommunications market. There are two differences between the model shown in Figure 2 and Gerpott's model. First, in Gerpott's model, retention is an intention level construct. In the model shown in Figure 2, retention is an actual behavior level construct. In the model used in this research, retention reflects actual customer behavior and not a statement that the customer intends to behave in a particular way. Retention in the model used in this research captures customers' extension or termination of the service, not customers' intention to extend or terminate the service.

The second difference between the model shown in Figure 2 and Gerpott's model is that Gerpott's model addresses a two-stage causal relationship between satisfaction-loyalty-retention while the model in Figure 2 takes the causal relationship between satisfaction-loyalty-retention as a given. The model in Figure 2 focuses on customer side antecedents of retention, loyalty intention, and satisfaction. Gerpott's model focuses on company side factors that affect retention, loyalty intention and satisfaction.

Figure 2. Research model

Providers of continuous services closely monitor customer-firm relationships. They use expensive Customer Value Management (CVM) systems to systematically measure how customers perceive the customer-firm relationship. The notion that customer's perception of the value of the service is the single most important determinant of profitability and growth over the long run underlies the design of CVM systems. Perception of price and quality attributes are used to develop action plans to improve customer value. Loyalty intentions are used to predict customer retention, which is then used to assess company performance.

The use of CVM systems has generated the following questions:

1. Why customers assess the same service differently?
2. For given satisfaction level, why customers' self-stated loyalty intentions vary?
3. Why stated loyalty intentions and satisfaction levels do not accurately predict retention?

The model shown in Figure 2 attempts to answer these questions. The answers may be that demographic characteristics (e.g., income, age and education) and customer profile attributes (e.g., service usage and account duration) affect customer retention, loyalty intention and satisfaction in ways not captured by Gerpott's model (Gerpott, 2001) and the abstractions used to design CVM systems.

3.2 Hypotheses

3.2.1 Customer retention

Rice (2003) found that high-income customers of mobile phones are more likely to continue to use the service than low-income users. Low-income customers will be more sensitive to price and more likely to leave the service provider. High-income users are said to have high payment equity, i.e., the level at which they perceive the exchange of service

for money to be fair is high. Bolton (1999) found that payment equity affects customers' subsequent usage of mobile phone services and that customers that have high payment equity continue to use the service for a longer time. The writer predicts that high-income customers will stay tend to stay with the service provider and that low-income customers will tend to leave. Therefore,

Hypothesis 1a: Income is higher for customers who stay than for those who leave.

Morwitz (1997) found that older customers and customers with high levels of education are less likely to change their minds regarding their intentions to continue using a service. Rice (2003) found that age and education are associated with Internet drop-out rates. Well educated and older customers are less likely to stop using the Internet service once they start to use it. It is predicted that customers with higher levels of education and who are older will stay with the service provider and that customers with lower levels of education and who are younger will leave. Therefore,

Hypothesis 1b: Education is higher for customers who stay than for those who leave.

Hypothesis 1c: Age is higher for customers who stay than for those who leave.

Bolton (1999) reported that a customer's past usage of a mobile phone service is associated with the future consumption of the service. The more a customer used the service in the past, the more likely the customer will continue to use the service in the future.

Customer's past usage of the service is also related to switching costs. Customers that have high usage of the service tend to rely on the specific features provided by the service. This leads to higher switching costs (Kim, 2004). The greater the usage of the service, the higher the switching cost. High switching costs are positively related to retention. Therefore:

Hypothesis 1d: Service usage is higher for customers who stay than for those who leave.

Israel (2003) identifies that there is a tenure dependency in the automobile insurance market. Customers' departure probability falls as tenure increases. The longer customers stay with the insurance service provider, the less likely they are to leave the company for another service provider. Bolton (1998) finds that the duration of a customer's account with a service provider strengthens the relationship between satisfaction and retention. The longer a customer has used a service provider in the past, the longer the customer will use the service provider in the future.

Morwitz (1997) found that customers' past experience with a good or a service is associated with customers' ability to predict how their purchase intentions will change over time. The greater the experience with the good or the service, the less likely a customer is to change his/her original purchase intention over time. Experience with the good or service is linked to account duration. The longer the duration of the account, the greater the experience with the service. Therefore,

Hypothesis 1e: Account duration is longer for customers who stay than for those who leave.

3.2.2 Customer loyalty intention

Customer satisfaction is positively related to customer loyalty intention (Bloemer, 1999; Gerpott, 2001; Kodupleski, 2003). Researchers have not linked customer attributes to loyalty intentions for continuously delivered services. In the goods market, however, Morwitz (1997) found that customers' loyalty intentions vary with customer attributes. At a given level of satisfaction, customers with certain attributes tend to overestimate their behavioral intentions; others tend to underestimate their intentions.

Mittal (2002) reported that customers with different demographic characteristics have different satisfaction thresholds or tolerance levels and that this modifies the satisfaction-intent link. Older customers and customers with higher levels of education and income tend to have lower satisfaction thresholds. This lower threshold makes them more likely to remain loyal to the brand with which they are familiar even when they encounter instances of service/product failure. Therefore,

Hypothesis 2a: Loyalty intention is greater for customers with high income than for those with low income.

Hypothesis 2b: Loyalty intention is greater for customers with high education than for those with low education.

Hypothesis 2c: Loyalty intention is greater for older customers than for younger customers.

Lee (2001) reports that the cost of switching affects loyalty intention. Customers with high past usage of the service and longer account duration may develop greater perceived economical and psychological difficulties when considering switching. This results in the customer experiencing a favorable attitude towards the service and greater intention to re-purchase the service (Kim, 2004). Therefore,

Hypothesis 2d: Loyalty intention is greater for customers with high service usage than for customers with low service usage.

Hypothesis 2e: Loyalty intention is greater for customers with long account duration than for customers with short account duration.

3.2.3 Customer satisfaction

Ratchford (1999) reports that lower satisfaction thresholds or higher tolerance levels also lead to high satisfaction ratings. A customer with a lower satisfaction threshold or a higher tolerance level will tend to be an “easy rater” while a customer with a high satisfaction threshold or a low tolerance level tends to be “harsh rater”. Kalwini (1982) identified that people with higher income, education and older age tend to be easy raters. Therefore,

Hypothesis 3a: Satisfaction is greater for customers with high income than for those with low income.

Hypothesis 3b: Satisfaction is greater for customers with high education than for those with low education.

Hypothesis 3c: Satisfaction is greater for older customers than for younger customers.

Bolton (1998) examined how customers of continuously provided services update their satisfaction based on their perceptions. He found that as a customer becomes more confident in evaluating a service, he/she weighs his/her prior satisfaction more heavily and places less weight on the new experience. As a result, a customer with greater past experience will cumulate higher satisfaction than a customer with less past experience. Therefore,

Hypothesis 3d: Satisfaction is greater for customers with high service usage than for customers with low service usage.

Hypothesis 3e: Satisfaction is greater for customers with long account duration than for customers with short account duration.

3.3 List of hypotheses

The following is a list of hypotheses that were developed in this chapter. They are organized into three types: retention, loyalty intention and satisfaction.

Retention

Hypothesis 1a: Income is higher for customers who stay than for those who leave.

Hypothesis 1b: Education is higher for customers who stay than for those who leave.

Hypothesis 1c: Age is higher for customers who stay than for those who leave.

Hypothesis 1d: Service usage is higher for customers who stay than for those who leave.

Hypothesis 1e: Account duration is longer for customers who stay than for those who leave.

Loyalty intention

Hypothesis 2a: Loyalty intention is greater for customers with high income than for those with low income.

Hypothesis 2b: Loyalty intention is greater for customers with high education than for those with low education.

Hypothesis 2c: Loyalty intention is greater for older customers than younger customers.

Hypothesis 2d: Loyalty intention is greater for customers with high service usage than for customers with low service usage.

Hypothesis 2e: Loyalty intention is greater for customers with long account duration than for customers with short account duration.

Satisfaction

Hypothesis 3a: Satisfaction is greater for customers with high income than for those with low income.

Hypothesis 3b: Satisfaction is greater for customers with high education than for those with low education.

Hypothesis 3c: Satisfaction is greater for older customers than for younger customers.

Hypothesis 3d: Satisfaction is greater for customers with high service usage than for customers with low service usage.

Hypothesis 3e: Satisfaction is greater for customers with long account duration than for customers with short account duration.

4 RESEARCH DESIGN

This chapter is organized into six sections. The first section provides the unit of analysis and the second the study period. The third section describes the sample. The fourth section describes how the data was collected. The fifth section describes how the variables were measured. Finally, the sixth section describes how the data was analyzed.

4.1 Unit of analysis

The unit of analysis of this research is a residential customer who subscribes to a continuously provided service from one of the competitive service providers in his/her territory.

4.2 Study period

The study period included August 2002 to June 2004. Data on customer loyalty intention and satisfaction were obtained for the period of August to October 2002. Data on customer retention was collected up to June 2004.

4.3 Sample

The sample was comprised of residential subscribers drawn from Bell Sympatico monthly CVM survey and its customer billing database.

4.4 Data collection

To collect the data, three steps were followed. The first step was to collect the results of telephone surveys of residential users of Internet services conducted by Bell Canada for the months of August, September and October 2002. Every month, Bell Canada randomly chooses 100 to 200 Sympatico Internet users from its Ontario and Quebec customer base and conducts a telephone survey. The survey questions include demographic questions (multiple choice), satisfaction and loyalty intention questions (10-point scale ranging from Extremely Disagree to Extremely Agree).

The second step was to obtain data on customer service usage and past account duration for the respondents of the survey. Using the Bell wireline phone numbers of the subscribers who responded to the survey, we queried the instances of the Sympatico billing database at times that the survey was conducted, and collected data on customer service usage and the duration of the account with Sympatico.

The third step was to obtain retention data. Using the Bell wireline phone numbers of the subscribers who responded to the surveys, we query the instances of Sympatico billing database at the times of January 2003 (5 months after survey time), June 2003 (10 months after survey time), January 2004 (17 months after survey time) and May 2004 (21 months after survey time) to track the customers' de-subscription. These de-subscriptions were used to derive the customer's retention.

4.5 Measurement of variables

Retention

The Sympatico billing database shows the status of a customer's account as "active" or "inactive" at certain points of time. "Active" means the contractual relationship still exists. "Inactive" means the contractual relationship has been terminated prior to the checkpoint. The database does not provide the actual de-subscription time.

The survey was carried out during the months of August to October of 2002. Status data was collected for four instances: (i) January 2003 (5 months after the survey was undertaken), (ii) June 2003 (10 months after the survey was undertaken), (iii) January 2004 (17 months after the survey was undertaken), and (iv) May 2004 (21 months after the survey was undertaken). For $t = 5, 10, 17$ and 21 months after the survey was undertaken, retention is "0" if the customer left by t , and retention is "1" if the customer stayed by t .

Loyalty intention

Loyalty intention is measured by respondent's answer (using a scale of 1 to 10 where 1 means "extremely unlikely" and 10 means "extremely likely") to the following question:

"Considering the choices that are available to you now or may be available to you in the future, how likely are you to continue to use Sympatico for the next six months as your Internet service provider?"

Satisfaction

Customer satisfaction level is measured by respondent's answer (using a scale of 1 to 10 where 1 means "extremely dissatisfied" and 10 "extremely satisfied") to the following question:

"Considering the overall quality in relation to the cost as well as its image, how would you rate the overall value of Sympatico Internet service on being worth what you paid?"

Income

A customer whose family income is \$60,000 or less per year is defined as a "low-income customer"; a customer whose family income is more than \$60,000 per year is defined as a

“high-income customer”.

Education

A customer whose education is high school graduate or less, college or technical school/GEGEP graduate is defined as a “low-education customer”; a customer whose education is university graduate or post graduate studies (Masters/Doctoral) is defined as a “high-education customer”.

Age

A 44-year-old and younger customer is defined as a “younger customer”; a 45-year-old and older customer is defined as an “older customer”.

Service usage

A customer’s service usage is measured as:

$$\text{Service Usage} = \text{Megabytes of data downloaded from the Internet} + \text{Megabytes of data uploaded to the Internet during the month of loyalty intent measurement}$$

A customer whose service usage is less than the mean is defined as a “low-service usage customer”; a customer whose service usage is greater than the mean is defined as a “high-service usage customer”.

Account duration

Account duration is measured as number of days from when the customer subscribes to the service to when it is checked whether or not the customer is active or inactive.

A customer whose account duration is less than the mean is defined as a “short-account duration customer”; a customer whose account duration is greater than the mean is defined as a “long-account duration customer”.

Table 4 provides the list of variables used in this research and how they were measured.

Table 4. Variables and measurements

Variable Name	Measurements
Retention	0 = left at t 1 = stay at t For t = 5, 10, 17, 21 months after survey date
Loyalty intention	Respondent’s rating of the likelihood of continuously using Sympatico for the next six months as his/her Internet service provider (1 being “extremely unlikely” and 10 being “extremely likely”)
Satisfaction	Respondent’s rating of the overall value of Sympatico Internet service on being worth what he/she paid (1 being extremely dissatisfied, and 10 being extremely satisfied)
Income	Low income = \$60,000 or less High income = more than \$60,000
Education	Low education = high school graduate or less, and college or technical school / GEGEP graduates

	High education = University graduate and post graduate studies (master/doctoral)
Age	Younger = 44 years old or less Older = more than 44 years old
Service usage	Megabytes of data downloaded from the Internet + Megabytes of data uploaded to the Internet during the month of loyalty intent measurement Low service usage: less than the mean High service usage: greater than the mean
Account duration	Account duration is measured as number of days from when the customer subscribes to the service to when it is checked whether or not the customer is active or inactive. Short account duration: less than the mean Long account duration: greater than the mean

4.6 Data analysis

The first step of the data analysis is to calculate the descriptive statistics of the variables.

The second step is to use the Mann-Whitney U-test to test the hypotheses. The Mann-Whitney U test is used because retention, income, age and education are categorical variables.

To test hypotheses H1a-H1e that predict that customer attributes are higher for customers who stay than for those who leave, I will compare the attributes variables between customers who stay and those who leave 5, 10, 17 and 21 months after the survey was

carried out. A hypothesis is supported if the Mann-Whitney U-tests for more than two of the four time periods reveal significant difference in the mean ranks at $p < 0.05$.

To test Hypotheses H2a-H2e and H3a-H3e that predict loyalty intention and satisfaction are higher for customers with higher attributes variables, I will compare loyalty intention and satisfaction between high and low-attributes customer groups. A hypothesis is supported if the Mann-Whitney U-tests show significant difference in the mean ranks at $p < 0.05$.

5 RESULTS

This chapter is organized into six sections. The first section describes the sample. The second section provides the descriptive statistics. The third section provides the results of testing the hypotheses related to retention. The fourth section provides the results of testing the hypotheses related to loyalty intention. The fifth section provides the results of testing the hypotheses related to satisfaction. The sixth section provides a summary of the results.

5.1 Data sample

A total of 541 responses to the Bell Sympatico survey conducted in August, September and October 2002 were collected. Of the 541 responses, 179 were for August 2002, 180 for September 2002, and 182 for October 2002.

Of the 541 responses from residential users data for 246 were missing. Thus, the sample is comprised of responses from 294 residential users of high-speed Internet services.

Table 5 provides a comparison between the distribution of the sample and the distribution of the entire Sympatico customer base for 2002 along major demographic parameters. It is believed that the sample selected for this research reflects Sympatico's customer base.

Table 5. Comparison between the sample and the entire Sympatico customer base along demographic parameters

Demographic parameters	Sample	Customer base
Ontario	59%	60%
Quebec	41%	40%
Male	56%	58%
Female	44%	42%
English Speaking	64%	61%
French Speaking	36%	39%

5.2 Descriptive statistics

Table 6 provides the descriptive statistics for the variables in the research model shown in Figure 2.

Table 6. Descriptive statistics

(Sample size = 294)

	Minimum	Maximum	Mean	Standard deviation	Skewness Statistic (Std error = .142)	Kurtosis Statistic (Std error = .283)
Loyalty intention	1	10	8.39	2.151	-1.619	2.260
Satisfaction	1	10	7.37	1.594	-.902	1.509
Income	1	4	2.45	1.122	.108	-1.355

Education	1	4	2.11	.952	.444	-.758
Age	2	7	4.18	1.239	.304	-.209
Service usage	0	30,867	1544.33	2,585.222	6.361	60.761
Account duration	103	2,355	658.47	423.962	1.560	2.826

5.3 Hypotheses 1a, 1b, 1c, 1d and 1e

Hypotheses 1a-1e predict that income, education, age, service usage and account duration are higher for users who remain as customers of the service provider than those who leave the service provider. These hypotheses were tested for four time periods: 5, 10, 17 and 21 months after the survey was carried out.

Table 7 shows the results of using the Mann-Whitney U test to compare income, age, education, service usage, and account duration between those customers who left and those who stayed 5 months after the survey was carried out. The results indicate that the mean rank size of education for the customers who remained with Sympatico was significantly higher than that for the customers who left. The customers who remained with and left Sympatico five months after the survey was carried out were not significantly different in terms of income, age, service usage and account duration.

Table 7. Mann-Whitney U test comparing customer attributes between customers who left and customers who stayed 5 months after the survey was carried out

	After 5 months	N	Mean Rank	Sum of Ranks
Income	Leave	38	128.50	4883.00
	Stay	256	150.32	38482.00
	Total	294		
Education	Leave	38	119.01	4522.50
	Stay	256	151.73	38842.50
	Total	294		
Age	Leave	38	153.67	5839.50
	Stay	256	146.58	37525.50
	Total	294		
Service usage	Leave	38	150.63	5724.00
	Stay	256	147.04	37641.00
	Total	294		
Account duration	Leave	38	137.61	5229.00
	Stay	256	148.97	38136.00
	Total	294		

	Income	Education	Age	Service usage	Account duration
Mann-Whitney U	4142.000	3781.500	4629.500	4745.000	4488.000
Wilcoxon W	4883.000	4522.500	37525.500	37641.000	5229.000
Z	-1.526	-2.323	-.495	-.243	-.769
Asymp. Sig. (2-tailed)	.127	.020	.620	.808	.442

Table 8 shows the results of using the Mann-Whitney U test to compare income, age, education, service usage and account duration between those customers who left and those who stayed 21 months after the survey was carried out. The results indicate that the mean rank size of income, age, education and account duration for the customers who remained with Sympatico was significantly higher than those for the customers who left. The customers who remained with and left Sympatico 21 months after the survey was carried out were not significantly different in terms of service usage.

Table 8. Mann-Whitney U test comparing customer attributes between customers who left and customers who stayed 21 months after the survey was carried out

	After 21 month	N	Mean Rank	Sum of Ranks
Income	Leave	112	127.11	14236.50
	Stay	182	160.05	29128.50
	Total	294		
Education	Leave	112	134.75	15092.50
	Stay	182	155.34	28272.50
	Total	294		
Age	Leave	112	128.09	14346.00
	Stay	182	159.45	29019.00
	Total	294		
Service usage	Leave	112	149.12	16701.00
	Stay	182	146.51	26664.00
	Total	294		
Account duration	Leave	112	133.76	14981.00
	Stay	182	155.96	28384.00
	Total	294		

	Income	Education	Age	Service usage	Account duration
Mann-Whitney U	7908.500	8764.500	8018.000	10011.000	8653.000
Wilcoxon W	14236.500	15092.500	14346.000	26664.000	14981.000
Z	-3.335	-2.117	-3.171	-.256	-2.174
Asymp. Sig. (2-tailed)	.001	.034	.002	.798	.030

Table A-1 in Appendix A provide the Mann-Whitney U tests comparing customer attributes between customers who left and customers who stayed 10 months after the survey was carried out. The results indicate that the mean rank size of income, age, and for the customers who remained with Sympatico was significantly higher than those for the

customers who left. The customers who remained with and left Sympatico 10 months after the survey was carried out were not significantly different in terms of service usage and account duration.

Table A-2 in Appendix A provide the Mann-Whiney U tests comparing customer attributes between customers who left and customers who stayed 17 months after the survey was carried out. The results indicate that the mean rank size of income and age, for the customers who remained was significantly higher than those for the customers who left. The customers who remained with and left 10 months after the survey was carried out were not significantly different in terms of education, service usage and account duration.

In summary, the results of the Mann-Whitney U tests indicate the following:

- Income is higher for users who stay 10, 17, and 21 months after the survey was conducted than for those who leave; there is no significant difference of income between those who stay and those who left after 5 months.
- Education is higher for users who stay 5, 10, and 21 months after the survey was conducted than for those who leave; there is no significant difference of education between those who stay and those who left after 17 months.
- Age is higher for users who stay 10, 17, and 21 months after the survey was conducted than for those who leave; there is no significant difference of age between those who stay and those who left after 5 months.
- There is no significant difference of service usage between those who stay and those who left after 5, 10, 17 and 21 months.

- Account duration is longer for users who stay 21 months after the survey was conducted than for those who leave; there is no significant difference of account duration between those who stay and those who left after 5, 10, and 17 months.

5.4 Hypotheses 2a, 2b, 2c, 2d and 2e

Hypotheses 2a-2e predict that loyalty intention is higher for customers with high income, more education, greater age, higher service usage, and longer account durations.

Table 9 shows the results of using the Mann-Whitney U test to compare loyalty intention between high-income customers and low-income customers. The results indicate that the mean rank of loyalty intention for high-income customers is significantly higher than that for low-income customers.

Table 9. Mann-Whitney U test comparing loyalty intention between high and low-income customers

	Income	N	Mean Rank	Sum of Ranks
Loyalty	Low	159	138.00	21941.50
	High	135	158.69	21423.50
	Total	294		

	Loyalty
Mann-Whitney U	9221.500
Wilcoxon W	21941.500
Z	-2.197
Asymp. Sig. (2-tailed)	.028

Tables B-1 to B-4 included in Appendix B provides the Mann-Whitney tests that compare loyalty intention between (i) customers with high and low education; (ii) older and younger customers; (iii) customers with high and low service usage; and (iv) customers with long and short account duration.

The results of the Mann-Whitney U tests indicate the following:

- Loyalty intention is higher for high-income customers than for low-income customers
- There is no significant difference in loyalty intention between high and low-education customers, older and younger customers, customers with high and low service usage, and customers with long and short account durations

5.5 Hypotheses 3a, 3b, 3c, 3d, and 3e

Hypotheses 3a-3e predict that satisfaction is higher for customers with high income, more education, greater age, higher service usage, and longer account durations.

Table 10 shows the results of using the Mann-Whitney U test to compare satisfaction between customers with high and low education. The results indicate that the mean rank of satisfaction for high-education customers is significantly higher than that for low-education customers.

Table 10. Mann-Whitney U test comparing satisfaction between high and low-education customers

	Education	N	Mean Rank	Sum of Ranks
Satisfaction	Low	199	153.54	30555.00
	High	95	134.84	12810.00
	Total	294		

	Satisfaction
Mann-Whitney U	8250.000
Wilcoxon W	12810.000
Z	-1.820
Asymp. Sig. (2-tailed)	.069

Tables C-1 to C-4 included in Appendix C provides the Mann-Whitney tests that compare satisfaction between (i) customers with high and low income; (ii) older and younger customers; (iii) customers with high and low service usage; and (iv) customers with long and short account duration.

The results of the Mann-Whitney U tests indicate the following:

- Satisfaction is higher for high-education customers than low-education customers
- There is no significant difference in loyalty intention between high and low-income customers, older and younger customers, customers with high and low-service usage, and customers with long and short-account durations.

5.6 Summary of results

Table 11 provides a list of the hypotheses and the results of testing.

Table 11. Summary of hypotheses tested

Hypotheses	Results	Conclusion
Hypothesis 1a: Income is higher for customers who stay than for those who leave.	Man-Whitney U tests suggest that income is greater for customers who stay after 10, 17 and 21 months than those who leave.	Supported
Hypothesis 1b: Education is higher for customers who stay than for those who leave.	Man-Whitney U tests suggest that education is greater for customers who stay after 5, 10, and 21 months than those who leave.	Supported
Hypothesis 1c: Age is higher for customers who stay than for those who leave.	Man-Whitney U tests suggest that age is greater for customers who stay after 10, 17 and 21 months than those who leave	Supported
Hypothesis 1d: Service usage is higher for customers who stay than for those who leave.	Man-Whitney U tests suggest that service usage for customers who stay after 5, 10, 17 and 21 months is not significantly different from service usage for the customers who leave.	Not supported
Hypothesis 1e: Account duration is longer for customers who stay than for those who leave.	Man-Whitney U tests suggest that account durations for customers who stay after 5, 10, and 17 months is not significantly different from account duration for the customers who leave.	Not supported

<p>Hypothesis 2a: Loyalty intention is higher for customers with high income than for those with low income.</p>	<p>Mann-Whitney U test results in Table 9 show that the mean rank for high-income customers is significantly higher than the low income rank.</p>	<p>Supported</p>
<p>Hypothesis 2b: Loyalty intention is higher for customers with high education than for those with low education.</p>	<p>Mann-Whitney U test results in Table B-1 show that the mean ranks for high and low-education customers are not significantly different.</p>	<p>Not supported</p>
<p>Hypothesis 2c: Loyalty intention is higher for older customers than younger customers.</p>	<p>Mann-Whitney U test results in Table B-2 show that the mean ranks for older and younger customers are not significantly different.</p>	<p>Not supported</p>
<p>Hypothesis 2d: Loyalty intention is higher for customers with high service usage than for customers with low service usage.</p>	<p>Mann-Whitney U test results in Table B-3 show that the mean ranks for high and low-service usage customers are not significantly different.</p>	<p>Not supported</p>
<p>Hypothesis 2e: Loyalty intention is higher for customers with long account duration than for customers with short account duration.</p>	<p>Mann-Whitney U test results in Table B-4 show that the mean ranks for long and short-account duration customers are not significantly different.</p>	<p>Not supported</p>
<p>Hypothesis 3a: Satisfaction is higher for customers with high income than for those with low income.</p>	<p>Mann-Whitney U test results in Table C-1 show that the mean ranks for high and low-income customers are not significantly different.</p>	<p>Not supported</p>
<p>Hypothesis 3b: Satisfaction is higher for customers with high education than for those with low education.</p>	<p>Mann-Whitney U test results in Table 10 show that the mean ranks for high-education customers are significantly higher than that for</p>	<p>Supported</p>

	low-education customers.	
Hypothesis 3c: Satisfaction is higher for older customers than for younger customers.	Mann-Whitney U test results in Table C-2 show that the mean ranks for older and younger customers are not significantly different.	Not supported
Hypothesis 3d: Satisfaction is higher for customers with high service usage than for customers with low service usage.	Mann-Whitney U test results in Table C-3 show that the mean ranks for high and low-service usage customers are not significantly different.	Not supported
Hypothesis 3e: Satisfaction is higher for customers with long account duration than for customers with short account duration.	Mann-Whitney U test results in Table C-4 show that the mean ranks for long and short account durations are not significantly different.	Not supported

6 DISCUSSION OF RESULTS

The objective of this research was to examine how customer attributes affect retention, loyalty intention, and satisfaction. Three sets of hypotheses were developed linking demographic and profile attributes variables to customer retention, loyalty intention and satisfaction. A sample comprised of 294 high-speed Internet users was used to test the hypotheses. Mann-Whitney U-tests were used to test the hypotheses.

6.1 Customer retention

The results suggest that high-income, well-educated and older users stay longer with the service provider.

The results provide support for Rice's (2003) findings. Rice (2003) found that the gap between Internet continuous-users and dropouts is associated with customer demographic characteristics including income, age and education.

The finding that the retention rates for customers with certain demographic characteristics are higher than that of other customers is in consistence with the "good/bad match" notion mentioned in Israel (2001). Israel (2001) identified that the departure probability of customers with certain attributes from service provider is higher than that of other customers, simply because they are "bad match" to the service. They are attracted to

subscribe to the service initially for various reasons. However, their demands for the service and purchase power are intrinsically lower than other customers. During the consumption of the service, they are vulnerable to triggering events and tend to terminate the service subscription.

Based on the results and the above discussions, we find the following:

1. For continuously provided Internet services, customers' demographic attributes such as income, education and age affect retention.
2. Internet service providers should segment the customer base using income, education and age. Different marketing plans and actions should be directed to different segments. For high-income, older and high-education customers, efforts should be made to acquire them; for low-income, younger and low-education customers, efforts should be made to retain them.
3. For continuously provided Internet services, service usage and account duration do not affect retention

6.2 Customer loyalty intention

The second set of hypotheses compare the loyalty intention between customers with high and low income, education, age and service usage, and long and short account duration. Customers with higher income state higher loyalty intention than customers with lower income.

Bouldings (1993), Bolton (1998), Bloemer (1999); and Gerportt (2001) identified that a customers loyalty intention is mainly determined by his/her cumulative satisfaction level and recent service experience. The findings in this research suggest that customers with higher income tend to state higher loyalty intention than other customers.

Comparing the results of loyalty intention with those for retention, we find the following:

1. Customers with higher income stay longer with the service provider, and also provide higher scores for loyalty intention.
2. Customers with higher education stay longer with the service provider, but do not provide higher scores for loyalty intention.
3. Older customers stay longer with the service provider, but do not provide higher ratings for loyalty intention.

4. Service usage and account duration do not affect loyalty intention.

6.3 Customer satisfaction

The third set of hypotheses compare satisfaction level between customers with high and low income, education, age and service usage, and long and short account duration. Customers with higher education provide higher satisfaction ratings.

A customer's satisfaction is mainly determined by the perception of the performance of individual quality attributes (Anderson, 1993; Gerpott, 2001). The results of this research identified which are the attributes of customers who tend to provide higher satisfaction ratings than other customers. For continuously provided Internet service, the attributes include income and service usage. This may be explained by the "easy/harsh rater" notion identified in Ratchford (1999), or the "systematic survey bias" notion identified in Mittal (2002). We expect that the specific customer attributes that affect satisfaction vary across industries and competitive environments. Continuously provided service should try to identify the specific attributes to better interpret the satisfaction data obtained from customer survey.

Comparing the results for satisfaction with those of loyalty intention and retention, we find the following:

1. Customers with higher education stay longer with the service provider, and have higher satisfaction level, but do not indicate higher loyalty intentions.
2. Customers with higher income state higher loyalty intention, and subsequently stay longer with the service provider, but they don't necessary have higher satisfaction level.
3. Older customers tend to stay longer with the service provider, but they neither state higher loyalty intention, nor have higher satisfaction level.
4. Service usage and account duration do not affect satisfaction level.

7 CONCLUSIONS, LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

7.1 Conclusions

The results suggest that (i) the income, education and age of the users who remain with the service provider are higher than that of the users who cease being customers; (ii) loyalty intention is higher for customers with high income than for those with low income; (iii) satisfaction with the service provider is higher for customers with high education than for those with low education; and (iv) service usage and account duration do not affect retention, loyalty intention and satisfaction.

The implications of these results are:

1. Attractive market segments for Internet service providers are comprised of high-income customers, older customers, and high-education customers.
2. The revenue from high-income, older and high-education customers is more stable than that from low-income, younger and low-education customers. The reason for this is that high-income, older and high-education customers do not turnover as frequently as low-income, younger and low-education customers do.
3. The functions responsible for managing customer relationships in service provider

organizations should make efforts in identifying customer attributes that have impact on retention, loyalty and satisfaction, and use the understanding to develop actions plans to improve customer retention, loyalty and satisfaction.

7.2 Limitations of the research

The first limitation of this research is that we only examined the relationship for continuously provided service with fixed periodic fee. We could not tell if the results of this research can be applied to other continuously provided services with variance fee or the combination of fixed periodic fee and variance fee.

The second limitation is that we only examined the independent impact of customer attributes on retention, loyalty intention and satisfaction without considering the possible interactions between customer attributes and other antecedents of retention, loyalty intention and satisfaction.

The third limitation is that retention, income, age and education were categorical variables, not continuous variables. Thus, the research could not examine the correlation or regression between dependent and independent variable.

7.3 Suggestions for future research

Interesting findings may be gained from following research opportunities:

1. Further research can examine the relationships between customer attributes and retention, loyalty intention and satisfactions for different types of continuously provided service (e.g. Internet, cellular phone, magazine subscription), and compare if the relationships vary across the types.
2. Further research can compare the relationships between customer attributes and retention, loyalty intention and satisfaction for continuously provided service, for transaction-based service (e.g. restaurant), and for goods markets (e.g. PC).
3. Further research can test whether there is any interaction between customer attributes and satisfaction or loyalty intention, whether the interaction impacts the subsequent retention, and whether the impact change over time.
4. There are already empirical studies linking retention, loyalty intention and satisfaction to firm level economic performance. Further research can check if the links show different characteristics for continuously provided services, for transaction-based service, and for goods markets.

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APPENDIX A: Mann-Whitney U-test results for retention

Table A-1. Mann-Whitney U-test comparing customer attributes between customers who left and customers who stayed 10 months after the survey was carried out

	After 10 months	N	Mean Rank	Sum of Ranks
Income	Leave	75	128.73	9654.50
	Stay	219	153.93	33710.50
	Total	294		
Age	Leave	75	123.81	9285.50
	Stay	219	155.61	34079.50
	Total	294		
Education	Leave	75	133.85	10039.00
	Stay	219	152.17	33326.00
	Total	294		
Service usage	Leave	75	150.83	11312.00
	Stay	219	146.36	32053.00
	Total	294		
Account duration	Leave	75	143.87	10790.50
	Stay	219	148.74	32574.50
	Total	294		

	Income	Age	Education	Service usage	Account duration
Mann-Whitney U	6804.50	6435.50	7189.000	7963.000	7940.500
Wilcoxon W	0	0	10039.000	32053.000	10790.500
Z	-2.291	-2.888	-1.691	-.393	-.428
Asymp. Sig. (2-tailed)	.022	.004	.091	.695	.669

Table A-2. Mann-Whitney U-test comparing customer attributes between customers who left and customers who stayed 17 months after the survey was carried out

	After 17 months	N	Mean Rank	Sum of Ranks
Income	Leave	97	129.29	12541.50
	Stay	197	156.46	30823.50
	Total	294		
Age	Leave	97	126.72	12292.00
	Stay	197	157.73	31073.00
	Total	294		
Education	Leave	97	137.14	13302.50
	Stay	197	152.60	30062.50
	Total	294		
Usage	Leave	97	150.93	14640.00
	Stay	197	145.81	28725.00
	Total	294		
Account duration	Leave	97	136.08	13200.00
	Stay	197	153.12	30165.00
	Total	294		

	Income	Age	Education	Service usage	Account duration
Mann-Whitney U	7788.500	7539.000	8549.500	9222.000	8447.000
Wilcoxon W	12541.500	12292.000	13302.500	28725.000	13200.000
Z	-2.664	-3.037	-1.539	-.485	-1.616
Asymp. Sig. (2-tailed)	.008	.002	.124	.628	.106

APPENDIX B: Mann-Whitney U test results for loyalty intention

Table B-1. Mann-Whitney U test comparing loyalty intention between high and low-education customers

	Education	N	Mean Rank	Sum of Ranks
Loyalty	Low	199	149.22	29694.00
	High	95	143.91	13671.00
	Total	294		

	Loyalty
Mann-Whitney U	9111.000
Wilcoxon W	13671.000
Z	-.529
Asymp. Sig. (2-tailed)	.597

Table B-2. Mann-Whitney U test comparing loyalty intention between older and younger customers

	Age	N	Mean Rank	Sum of Ranks
Loyalty	Younger	185	144.00	26640.50
	Older	109	153.44	16724.50
	Total	294		

	Loyalty
Mann-Whitney U	9435.500
Wilcoxon W	26640.500
Z	-.971
Asymp. Sig. (2-tailed)	.332

Table B-3. Mann-Whitney U test comparing loyalty intentions between high and low-service usage customers

	Service usage	N	Mean Rank	Sum of Ranks
Loyalty	Low	207	144.75	29962.50
	High	87	154.05	13402.50
	Total	294		

		Loyalty
Mann-Whitney U		8434.50
Wilcoxon W		29962.50
Z		-.905
Asymp. Sig. (2-tailed)	Sig.	.365

Table B-4. Mann-Whitney U test comparing loyalty between long and short-account duration customers

	Account duration	N	Mean Rank	Sum of Ranks
Loyalty	Short	176	149.16	26251.50
	Long	118	145.03	17113.50
	Total	294		

		Loyalty
Mann-Whitney U		10092.500
Wilcoxon W		17113.500
Z		-.431
Asymp. Sig. (2-tailed)	Sig.	.666

APPENDIX C: Mann-Whitney U-test results for satisfaction

Table C-1. Mann-Whitney U test comparing satisfaction between high and low-income customers

	Income	N	Mean Rank	Sum of Ranks
Satisfaction	Low	159	147.79	23499.00
	High	135	147.16	19866.00
	Total	294		

		Satisfaction
Mann-Whitney U		10686.000
Wilcoxon W		19866.000
Z		-.066
Asymp. Sig. (2-tailed)	Sig.	.947

Table C-2. Mann-Whitney U test comparing satisfaction between older and younger customers

	Age	N	Mean Rank	Sum of Ranks
Satisfaction	Younger	185	145.33	26886.50
	Older	109	151.18	16478.50
	Total	294		

		Satisfaction
Mann-Whitney U		9681.500
Wilcoxon W		26886.500
Z		-.588
Asymp. Sig. (2-tailed)	Sig.	.557

Table C-3. Mann-Whitney U test comparing satisfaction between high and low-service usage

	Service usage	N	Mean Rank	Sum of Ranks
Satisfaction	Low	207	152.00	31464.50
	High	87	136.79	11900.50
	Total	294		

	Satisfaction
Mann-Whitney U	8072.500
Wilcoxon W	11900.500
Z	-1.446
Asymp. Sig. (2-tailed)	.148

Table C-4. Mann-Whitney U test comparing satisfaction between long and short-account duration customers

	Account duration	N	Mean Rank	Sum of Ranks
Satisfaction	Short	176	147.93	26035.00
	Long	118	146.86	17330.00
	Total	294		

	Satisfaction
Mann-Whitney U	10309.000
Wilcoxon W	17330.000
Z	-.108
Asymp. Sig. (2-tailed)	.914