The Influence of Technology on Internet Brand Loyalty: An Exploratory Study

Yah-Ting Gwee  
School of Computing  
National University of Singapore  
mgwee@comp.nus.edu.sg

Kai-Lung Hui  
School of Computing  
National University of Singapore  
lung@comp.nus.edu.sg

Abstract

Acquiring new consumers is an expensive process. More often, profits are generated only during the later stage of serving loyal consumers. An increase in the number of e-businesses results in an urgency to better understand the concept of e-loyalty. This research therefore aims to provide some insights as to how technological aspects, namely Website quality and product/technology innovation, may contribute towards the building and strengthening of a loyal consumer base through the mediating influence of satisfaction. By performing confirmatory factor analysis on a set of survey data, we show that high Website quality and innovative products/services or technologies could reinforce consumer satisfaction, which in turn positively enhances the loyalty to an Internet brand.

Keywords: brand loyalty, satisfaction, Website quality, product/technology innovation, e-businesses

1. Introduction

Along with the Internet evolves a new marketing arena coupled with a different distribution structure. By offering products or services online, companies can enjoy a wider market outreach and broader product lines at a lower cost as compared to conventional brick-and-mortar outlets. Consumers are spoiled with an explosive number of choices that are available conveniently from an electronic marketplace.1 Word of mouth surfacing from a variety of forms such as electronic mails, online forums and communities, etc., enables quick transfer of feedbacks and recommendations. The Internet therefore presents a new paradigm shift in conducting transactions and may radically alter business environments (Hoffman and Novak 1996; Rayport and Sviokla 1995).

According to data from the U.S. Census Bureau, electronic commerce (e-commerce) revenue for business-to-consumer (B2C) segments, which include retail and selected service industries, was US$71 billion in 2001. This represents an increase of nine percent over the revenue of US$65 billion obtained in 2000. These statistics further reflect the potential growth of B2C on the Internet. To seize such lucrative opportunities, many companies are entering electronic businesses without realizing its full challenges (e.g., competitive pricing, weakening customer loyalty, diminishing product differentiation, etc.). Although consumers display an encouraging attitude towards the Internet as an alternative marketing channel, the enhanced convenience in product or service comparisons exposes them to more choices, thereby intensifying competition among online marketers and making it difficult to survive in such a pervasive electronic marketplace.

1 Physical outlets typically have time and geographical constraints. In comparison, it is easier for Websites that can be accessed all round the clock to create a global presence and attract consumers worldwide. However, we need to consider the availability of the existing Internet infrastructures and service providers in a country.
While acquiring new consumers can be expensive, more profits may eventually be generated from subsequent transactions where the costs of serving these loyal consumers tend to be lower (Srinivasan et al. 2002). Old consumers may already have some experiences with a company, and if these experiences were positive, then less time is required to convince them to enter into additional transactions. Being more familiar with the products or services, they would most likely have fewer questions for the company. As a result, lower costs are incurred in serving them. However, with choices available at a few mouse clicks away, even the most loyal consumer might be tempted to show occasional defection. Such switching behavior is not desirable as brand loyalty or electronic loyalty (e-loyalty), is a critical success factor to online companies (Reichheld and Schefter 2000). In their move to expand customer base, companies not only have to recognize that attracting new consumers is important, but retaining old consumers is equally vital. They need to understand why some consumers, even though satisfied, drift away or discontinue their purchases.

On a positive note, recent studies have found significant evidence of brand loyalty in e-businesses (e.g., Smith and Brynjolfsson 2001), implying that online companies can still build and reap benefits from a loyal customer base. A good example is Amazon.com, whose success can be partly attributed to its strong brand loyalty with 66 percent of purchases coming from returning consumers (Naini 1999). It is therefore essential for firms to understand the antecedents of e-loyalty. Our study addresses this issue by analyzing the technological characteristics (Website quality and product/technology innovation) of online companies from the perceptions of consumers, and tests a model of how these factors are able to drive the formation of e-loyalty through affecting consumer satisfaction using structural equation modeling. To avoid introducing consumer bias from the influence of existing physical storefronts, we shall focus on pure online service companies. Through this model, we provide e-businesses with managerial guidance on how to develop e-loyalty and more importantly, how to encourage repeated purchases through their Websites. For researchers, our findings can contribute to another direction of research that studies technological factors, in the area of e-loyalty.

2. Theory and Hypotheses
Research on brand loyalty has been conducted extensively in marketing and consumer psychology, resulting in a sizable amount of literature (e.g., Day 1969; Sheth 1967). For our purpose, we extend the traditional brand loyalty concept to online consumer behavior and define e-loyalty as the tendency for repeated consumption arising from sincere liking of an online brand in light of the presence of conveniently available alternatives and competitive attempts to induce switching behavior. Back in the early twenties, Copeland (1923) had already termed this phenomenon as consumer insistence. He focuses on consumer purchase behavior in different product categories and describes how persistency in a brand (where substitutes are seldom accepted) can influence consumption habits. Following this line of

---

2 According to Reichheld and Schefter (2000), the cost of attracting a new consumer through an online environment is at least 20 to 40 percent higher than that in an equivalent traditional marketplace. Loyalty is therefore particularly relevant to e-businesses.

3 The characteristics of a product or service will largely influence if it is suitable to be transacted on the Internet (Peterson et al. 1997). For this reason, in our study, we have selected Web-based services – search engines and e-mail providers. These can only be made available through the electronic medium.

4 Copeland (1923) divides merchandises into three classes, namely convenience, shopping and specialty, according to consumer purchase habits. Convenience products are available at highly accessible locations and purchase on regular basis; shopping products require some comparisons of price, quality, design, etc., before a decision can be finalized; and specialty products are pre-determined by consumers in advance and special effort must be taken to visit the store.
suggestion, empirical investigations on consumer loyalty were also conducted (e.g., Churchill 1942; Guest 1942; Link 1934). The topic of brand loyalty sparked off widespread interest after a series of articles by Brown (1952; 1953); using a sequence-of-purchase measurement approach, he classifies loyalty into four categories – undivided, divided, unstable and no loyalty.\(^5\)

It is obvious that brand loyalty plays a useful role in developing theories of buyer behavior (Sheth 1972). Despite the vast amount of work in developing this construct, inconsistent definitions and measurements have made it difficult to compare and consolidate the findings.\(^6\) To illustrate, given a purchase sequence, a consumer who is deemed loyal under the percent-of-purchase criterion may be considered loyal only when he/she has three or more consecutive purchases of the same brand under the sequence-of-purchase criterion. Further, as pointed out by Schultz and Bailey (2000), much of these concepts have been developed from marketers’ viewpoint (i.e., economic value of loyalty and/or management issues) rather than consumers’ viewpoint (i.e., why consumers are loyal to a brand). For this reason, we focus on consumer perspective and adopt an end-user survey methodology. In this study, brand loyalty was measured and tested using survey questions comprising high-level items\(^7\) so as to seek a deeper knowledge of behavioral consistency without neglecting psychological influences.

The positive feeling of consumers toward a brand brings about satisfaction, which is often considered an important antecedent of loyalty (Bloemer and Kasper 1995; LaBarbera and Mazursky 1983; Shankar et al. 2003). In this research, we define satisfaction as a pleasurable fulfillment response arising from direct experiences with a brand; it is a subjective evaluation of the brand’s performance to expectations. This definition is in line with the expectancy-disconfirmation model proposed by Oliver (1980). Consumers who are satisfied are known to remain more loyal to a brand as compared to those with negative experiences in using the product or service.\(^8\) However, Oliva et al. (1992) suggested that the relationship between service satisfaction and loyalty is nonlinear. When satisfaction changes above or below some critical levels, repeated purchases rise or fall rapidly; within these critical levels, satisfaction has minimal impact on loyalty. Moreover, to say that satisfaction and loyalty thus move in tandem is incorrect (Stewart 1997). As noted by Oliver (1999), satisfaction is an unreliable precursor to loyalty and their relationship should be asymmetric. In other words, loyal consumers are most probably satisfied, but satisfaction does not always translate into loyal behavior.

\(^5\) Undivided loyalty refers to the consistent buying of a brand, e.g. AAAAAA; divided loyalty refers to an alternation between two brands, e.g. ABABAB; unstable loyalty refers to the consistent buying of first brand and then second brand, e.g. AAABB; and finally, no loyalty refers to an irregular buying of different brands, e.g. AFCBDE. Here, the use of consumer purchase patterns relies on some judgment to determine the strength of loyalty reflected by the individual patterns.

\(^6\) Brand loyalty is an extensively studied construct and there are numerous definitions for it. In their book, Jacoby and Chestnut (1978) discuss 53 operational definitions of loyalty, categorizing them into behavioral (i.e., indices based on actual overt behavior or self-reports of actual past behavior), attitudinal (i.e., indices based strictly on preference statements or statements of likely behavior) and composite (i.e., indices reflecting some combination of behavioral and attitudinal aspects) indices.

\(^7\) Some examples include “I consider myself to be loyal to X” and “I will not use other Y services if X is available”, where X = studied brand and Y = selected Web-based service. The full item set is found in Table 1.

\(^8\) Research on disconfirmation-based satisfaction models shows that the impact from a unit of negative disconfirmation on dissatisfaction is greater than that from a unit of positive disconfirmation on satisfaction (Anderson and Sullivan 1993; DeSarbo et al. 1994). This conforms to the disproportionate influence of negative information (Mizerski 1982).
Unlike in traditional marketplaces that are often characterized by choice restrictions, the Internet offers consumers more alternatives and opportunities. The almost instantaneous information allows consumers to compare products or services of sellers with minimal time and effort, regardless of their locations. Further, Internet shopbots\(^9\) provide more convenient access to price and product information from competing retailers, thereby helping consumers in their comparisons. In fact, it has been shown that shopbots can reduce search costs by at least 10-fold as compared to outlet- and telephone-based shopping (Brynjolfsson and Smith 2000). It becomes easier to switch brands and consumers, even though satisfied, might just cease using the product or service without any apparent reasons (Schultz and Bailey 2000). Hence it is interesting to explore if satisfaction brings about loyalty in an electronic marketplace amidst the many choices that are only a few mouse clicks away. Recent studies have suggested that the satisfaction-loyalty linkage is stronger in online than offline environment (e.g., Shankar et al. 2003). We repeat this test in our study to see if our proposed independent variables (i.e., Website quality and product/technology innovation) do indeed influence consumer loyalty on the Internet via satisfaction. Therefore, we posit our first hypothesis as:

**H1: Satisfaction is positively related to e-loyalty; a more satisfied consumer shows higher loyalty to a brand.**

To e-businesses, their Websites are regarded with much importance since they serve as the central, and in pure online businesses, the only interface for interaction with consumers (Palmer and Griffith 1998). A Website is the tangible aspect of an online service that is partially comparable to the appearance of a storefront or service counter (Berman and Green 2000). In this paper, we define Website quality as \textit{the overall excellence or superiority of a Website; it includes both information (e.g., relevance, reliability and adequacy) and system (e.g., user-friendly interface and ease of navigation) aspects}.\(^{10}\) As compared to television or newspaper communication, a Website is potentially more comprehensive and effective in targeting mass audience (Budman 1998). An online company is able to build and establish its reputation via a superior Website. However, in the absence of human interaction, such an electronic medium can become impersonal and uninteresting. Hence the design elements of a Website, including the extent of personalization available, are important in enhancing consumer recognition and recall (e.g., Henderson and Cote 1998). In general, an appealing Website ought to be simple, intuitive, user-friendly and has a short response time.\(^{11}\) Being more comfortable with the Website, consumers will be more ready to commit themselves to a transaction. One example is Amazon.com whose excellent user interface (i.e., ease-of-use and information clarity) provides tangible service benefits (Gefen and Straub 2000).

Studies have shown that poorly designed physical outlets that carry a confusing store layout may reduce shopping pleasure and even deteriorate consumer moods (e.g., Spies et al. 1997). On top of that, store designs can influence consumer judgment of merchandise quality (Baker et al. 2002). Drawing on these inferences, Websites that fail to meet consumer expectations

\(^9\) Shopbots are Web-based services that offer one-click access to collect and display product information from competing retailers; consumers can then rank them based on product attributes such as price or shipping time for comparisons (Smith and Brynjolfsson 2001).

\(^{10}\) McKinney et al. (2002) study Website quality in terms of information quality (IQ; e.g., detailed and accurate product/service descriptions) and system quality (SQ; e.g., working and clear hyperlinks). Six IQ (i.e., relevance, understandability, reliability, adequacy, scope and usefulness) and six SQ (i.e., access, usability, entertainment, hyperlinks, navigation and interactivity) dimensions were identified.

\(^{11}\) This is particularly so in an electronic marketplace since consumers are seasoned and thus expect fast and efficient processing of their online transactions (Schaffer 2000).
(e.g., taking too long to load, or in worse cases, are inaccessible) can result in much frustration and displeasure, making consumer experiences with them less satisfying. In his study, Schaffer (2000) found that bad navigation design was the reason why 30 percent of consumers left a Website without making any purchase. It is therefore necessary to arrange information in a logical and visible manner such that consumer search processes can be simplified, which in turn minimizes the effort and errors incurred (Cameron 1999; Sinioukov 1999). A Website of low quality also reflects negatively upon its products or services. Prior research suggests that a good Website can capture greater online traffic and sales (Lohse and Spiller 1998), and create satisfying online experiences (Szymanski and Hise 2000). Hence our next hypothesis is posited as:

**H2a: Website quality is positively related to satisfaction; a higher quality Website leads to a more satisfied consumer.**

E-commerce is made possible through and constantly enhanced by information technology innovations. However, in a fast-changing digital economy where innovation rate is somewhat high, a technology that is new today may be phased out in no time. Here, we define product/technology innovation as *the rate of launching new products or services, or using state-of-the-art technologies.* On the Internet, new or improved alternatives can be introduced to consumers as soon as they are available. This intensifies market competition and, for consumers to remain with a company, they have to believe that its products or services are the best. To meet the volatile expectations of consumers, online companies need constant advancements in their technology or product innovations. Continual enhancements and innovations are therefore essential in keeping consumers happy. However, it may be difficult to protect these technological innovations (Duliba et al. 2001). This applies especially to electronic marketplaces where information can be transferred with minimal cost, thereby bringing about quicker imitations of new innovations. Diminishing product differentiation coupled with intense price competition may make the Internet an almost perfect market (Kuttner 1998).

On the other hand, previous results in market pioneer and innovation activities show that early movers enjoy initial and sustainable market share advantages (e.g., Robinson and Fornell 1985; Urban et al. 1986). For example, eBay introduces the proxy bidding technology and feedback mechanism in its auction business, and these innovative measures have largely contributed to its success. Moreover, consumers who are satisfied with a pioneering brand might use it as a benchmark for subsequent entrants (Schmalensee 1982), implying that a more innovative brand may position itself as the de facto standard with ideal quality. Such pioneering advantage can translate into confidently held judgments and more favorable attitudes regarding the products or services (Kardes and Kalyanaram 1992), thereby inducing higher consumer satisfaction. Proactively understanding the novel features or technologies that attract and interest consumers, and introducing them quickly may keep consumers delighted and satisfied. Therefore, our last hypothesis is posited as:

**H2b: Product/technology innovation is positively related to satisfaction; a higher innovation leads to a more satisfied consumer.**

Figure 1 depicts our research model with the four constructs and the three hypothesized paths.

---

12 We consider both product and technology innovation in a single construct since e-businesses, especially those in the service sectors, often incorporate new technologies into their products/services and advertise them together. Hence consumers are likely to perceive these innovations to be correlated with each other.
For brevity, we include the path coefficients and standard errors (in parentheses) in the research model. All hypotheses were evaluated using one-tailed tests. * p < 0.05; ** p < 0.01.

3. Methodology

By formulating our hypotheses at the individual consumer level, we adopted a self-report survey approach. To ensure familiarity with the selected brands, we focused on two popular Web-based service industries – search engine and email provider. Frequency count from interviewing 30 undergraduate students in a large university suggested that the most popular search engines are AltaVista, Google and Yahoo; and that the most popular email service providers are Hotmail, Lycos Mail and Yahoo Mail.

The measurement instruments were adapted from well-tested items in previous studies (e.g., Oliver 1980; Srinivasan et al. 2002; Yoo et al. 2000). For each brand, the questionnaire was customized in terms of brand name and the corresponding service category. The initial version of the questionnaire contained 25 high-level items that were framed using a seven-point Likert scale. Two rounds of pilot studies, each involving 24 upper-division undergraduate students, were conducted to assess and purify the items. The participants also commented on the survey design such as the layout, structure and clarity of the questions. Preliminary reliability analyses were performed to identify potential problematic items. After discarding, rephrasing and adding new measurement items, we arrived at 25 items (see Table 1) that measure the four constructs.

The different versions of the questionnaire were then randomly distributed to a pool of undergraduate and postgraduate students from a large university. We collected a total of 328 completed surveys among which 45.7 percent are females, and 97.3 percent are between 18 to 25 years old. Most of the subjects have extensive Internet experience with 65.2 percent of them spending more than 12 hours per week surfing the Internet.
Table 1. Items and Measurement Properties

<table>
<thead>
<tr>
<th>Item</th>
<th>Standardized loading</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Website Quality</strong></td>
<td></td>
</tr>
<tr>
<td>(composite reliability = 0.87; Cronbach’s α = 0.87; average variance extracted = 0.58)³</td>
<td></td>
</tr>
<tr>
<td>The website quality of X is well maintained.</td>
<td>0.79 (16.67)</td>
</tr>
<tr>
<td>X maintains a high standard of website quality.</td>
<td>0.82 (17.38)</td>
</tr>
<tr>
<td>The website quality of X is superior.</td>
<td>0.79 (16.46)</td>
</tr>
<tr>
<td>X has poor website quality.⁴</td>
<td>0.63 (12.06)</td>
</tr>
<tr>
<td>I am disappointed with the website quality of X.⁴</td>
<td>0.76 (15.52)</td>
</tr>
<tr>
<td><strong>Product/technology Innovation</strong></td>
<td></td>
</tr>
<tr>
<td>(composite reliability = 0.87; Cronbach’s α = 0.85; average variance extracted = 0.53)</td>
<td></td>
</tr>
<tr>
<td>In the Y service industry, X is the pioneer in bringing out new products or technologies.</td>
<td>0.49 (9.14)</td>
</tr>
<tr>
<td>When improving products or technologies, X has been fast.</td>
<td>0.74 (16.47)</td>
</tr>
<tr>
<td>X is fast in advancing its products or technologies.</td>
<td>0.85 (18.62)</td>
</tr>
<tr>
<td>It appears that X is in the forefront in terms of new product or technology development.</td>
<td>0.74 (15.10)</td>
</tr>
<tr>
<td>X has been fast in enhancing its products or technologies.</td>
<td>0.89 (19.86)</td>
</tr>
<tr>
<td>X is lagging behind in launching trendy products or using new technologies.⁴</td>
<td>0.52 (9.66)</td>
</tr>
<tr>
<td><strong>Satisfaction</strong></td>
<td></td>
</tr>
<tr>
<td>(composite reliability = 0.92; Cronbach’s α = 0.91; average variance extracted = 0.73)</td>
<td></td>
</tr>
<tr>
<td>It has been a wonderful experience for me in using X.</td>
<td>0.82 (17.96)</td>
</tr>
<tr>
<td>I have much satisfaction from using X.</td>
<td>0.77 (16.17)</td>
</tr>
<tr>
<td>I am happy with using X.</td>
<td>0.90 (20.89)</td>
</tr>
<tr>
<td>I am very satisfied with X.</td>
<td>0.92 (21.45)</td>
</tr>
<tr>
<td><strong>E-Loyalty</strong></td>
<td></td>
</tr>
<tr>
<td>(composite reliability = 0.90; Cronbach’s α = 0.89; average variance extracted = 0.65)</td>
<td></td>
</tr>
<tr>
<td>X will always be my first choice.</td>
<td>0.92 (21.59)</td>
</tr>
<tr>
<td>I consider myself to be loyal to X.</td>
<td>0.75 (15.75)</td>
</tr>
<tr>
<td>X is always the first Y service in my consideration set.</td>
<td>0.91 (21.15)</td>
</tr>
<tr>
<td>I will not use other Y services if X is available.</td>
<td>0.74 (15.31)</td>
</tr>
<tr>
<td>I consider other Y services before using X.⁴</td>
<td>0.67 (13.39)</td>
</tr>
</tbody>
</table>

¹ X = one of the studied brands in the corresponding category; Y = search engine or email provider.
² t-statistics are in parentheses. All t-statistics were significant with p < 0.01.
³ The meaning of Website quality was explained, with examples, to subjects before they filled in the surveys.
⁴ Data was reverse-coded.

4. Data Analysis and Results

Confirmatory factor analysis was performed to assess the construct measurement and test the theoretical hypotheses. We followed the two-step recommendation by Anderson and Gerbing (1988). A more conservative significance level of 0.01 for all χ² statistics was used when examining model fits and comparisons.

First, we estimated a measurement model by including all possible correlations between the four studied constructs. Based on this model, we evaluated the conceptual distinctiveness of the constructs through six pair-wise comparisons using χ² difference tests. The χ² differences, obtained by subtracting the χ² of the full model from the respective 3-construct models, are significant, implying that no constructs should be combined.

Our initial measurement model revealed a modest fit to the data with a goodness-of-fit index (GFI) of 0.85. To identify problematic items, we examined the standardized residual matrix of the estimated model. As a guideline, a good model should have less than five percent of the standardized residuals with absolute values greater than 2.58 (Hair et al. 1998). Based on this premise, we dropped five items that either load considerably onto other constructs, or do
not correlate well with the other items of its own construct. The re-specified measurement model has four constructs with 20 items and each construct is measured by a minimum of three items.

The results of the convergent validity tests (see Table 1) are all above the recommended thresholds (Fornell and Larker 1981; Nunnally 1978). Almost all items have standardized loadings exceeding 0.50 and they were statistically significant.

For discriminant validity (see Table 2), the variance extracted for each construct was larger than its shared variance with the other constructs. This implies high correlations between items measuring the same construct, but not across different constructs.

Table 2. Shared Variance Among Constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Website Quality</th>
<th>Product/Technology Innovation</th>
<th>Satisfaction</th>
<th>E-Loyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Website Quality</td>
<td>0.58</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product/Technology Innovation</td>
<td>0.24</td>
<td>0.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction</td>
<td>0.48</td>
<td>0.20</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>E-Loyalty</td>
<td>0.19</td>
<td>0.13</td>
<td>0.54</td>
<td>0.65</td>
</tr>
</tbody>
</table>

The fit indices of the measurement and structural models, together with their recommended thresholds, are shown in Table 3.

Table 3. Goodness-of-Fit Measures

<table>
<thead>
<tr>
<th>LISREL-Provided Measure</th>
<th>Value (Measurement Model)</th>
<th>Value (Structural Model)</th>
<th>Recommended Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goodness-of-Fit Index (GFI)</td>
<td>0.92</td>
<td>0.91</td>
<td>&gt; .90</td>
</tr>
<tr>
<td>Root Mean Square Residual (RMSR)</td>
<td>0.06</td>
<td>0.07</td>
<td>&lt; .10</td>
</tr>
<tr>
<td>Root Mean Square Error of Approximation (RMSEA)</td>
<td>0.05</td>
<td>0.05</td>
<td>.05 – .08</td>
</tr>
<tr>
<td>Adjusted Goodness-of-Fit Index (AGFI)</td>
<td>0.89</td>
<td>0.89</td>
<td>&gt; .80</td>
</tr>
<tr>
<td>Non-Normed Fit Index (NNFI)</td>
<td>0.96</td>
<td>0.96</td>
<td>&gt; .90</td>
</tr>
<tr>
<td>Normed Fit Index (NFI)</td>
<td>0.93</td>
<td>0.93</td>
<td>&gt; .90</td>
</tr>
</tbody>
</table>

* Based on Sharma (1996) and Hair et al. (1998).

An inspection of the equation-to-equation $R^2$ of the endogenous constructs revealed that the model accounts for 56.76 and 61.73 percent of the variance in satisfaction and e-loyalty respectively. These values exceed the 10 percent benchmark (Falk and Miller 1992), indicating substantial explanatory power of our model on the formation of e-loyalty in online businesses.

The path coefficients and their associated t-values are reported in Figure 1. All hypotheses were supported.

5. Discussion and Implications

Despite the importance of brand loyalty, companies do not normally capture the value of a loyal consumer in their accounting systems. However, studies have shown that returning consumers may possibly generate increasing profits (e.g., Heskett et al. 1994; Reichheld and Sasser 1990) and Web technologies, when deployed appropriately, may strengthen this intrinsic loyalty. Loyal consumers form relationships with a company and behave differently from non-loyal ones (Zeithaml et al. 1996). Further, in view of the high cost of acquiring
new customers and the unique economics of e-businesses, consumer loyalty in the online environment deserves a special attention (Reichheld and Sasser 2000). By studying how technological factors are able to drive the formation of e-loyalty through the mediating influence of satisfaction, the results of our study have important managerial and research implications.

To practitioners, the sound support for the satisfaction-loyalty relationship implies that satisfying consumers is important in stimulating inert consumption behavior, even in electronic marketplaces. Contentment with a brand may impede consumers to search further for alternatives, therefore making them loyal. Such behavior can be viewed as a form of risk aversion strategy by consumers. This means that consumers who are happy with a product or service are likely to avoid the risk of potential dissatisfaction in switching to an alternative brand (Watkins 1986). Moreover, these consumers may be willing to pay a premium price for products or services that they trust instead of incurring additional search costs and risks by purchasing from unfamiliar companies. Their behavior might be driven by both economic aspects of transactions and their relationships with the company (Jain et al. 1987).

Consumers become satisfied when a product or service meets their expectations. Quite often, these consumers develop a liking for the brand. Due to this affinity for a brand, satisfied and loyal consumers may become more tolerance towards mistakes from the company (Reichheld and Schefter 2000). They also have a higher tendency to talk about and recommend the brand to others. Such word-of-mouth does not incur additional advertising expenses and can be more influential than typical advertising channels like television and radio since communication is now between people who know one another, say friends and family. On the electronic communication medium, these free advertisements possibly will also surface in a variety of forms such as online communities and forums (Duhan et al. 1997). Compliments or complaints will be able to propagate and reach more consumers on the Internet with minimal time lag. These feedbacks are then applied in consumer decision heuristics that forgo certainty of a correct judgment in exchange for a more efficient decision process (Payne 1977). Therefore, the efforts to understand and fulfill consumer expectations so as to keep them satisfied and comfortable go a long way in contributing to the survival of e-businesses.

Maintaining a high Website quality and introducing innovative products/services or technologies can help to create and enhance satisfaction. A well-designed Website is able to influence consumer acceptance of technology and this in turn impacts the success of online activities (Dabhokar 1996). Moreover, product/technology innovations (e.g., improved indexing scheme for faster search retrieval, enhanced encryption techniques for more secure email facilities, etc.) serve to offer extra features or functionalities that boost consumer experiences in using the Website. For example, the ease of using a Website has been found to impact decisions in utilizing information technology (Davis et al. 1989; Hill et al. 1987).

Our results indicate that satisfaction increases with a better Website and faster/earlier innovation. Consumers who feel more comfortable using a Website tend to accumulate more positive experiences. Being more satisfied, they may be tempted to increase their visits to the Website. In fact, deriving enjoyment and assurance during the interaction process may be a form of intrinsic psychological motivations for consumers to re-visit a Website frequently (Chau et al. 2002). One interesting point to note is that the CFA results show a stronger link between satisfaction and Website quality than that with product/technology innovation. This appears reasonable since the basic functionalities of a Website must be operational before
consumers are interested in the additional features, no matter how innovative these can be. Hence e-businesses ought to place more emphasis on improving their Websites prior to any attempts to offer innovative functionalities or technologies.

From a research perspective, our model highlights the importance of technological characteristics in shaping brand loyalty on the Internet. We see how Web-based marketing factors may be manipulated to build and reinforce e-loyalty, considering also their respective strength of influence. Nevertheless, this conceptual model is not exhaustive – it will be interesting to investigate other perceptual constructs such as trust; or to see if other Internet-specific variables or practices may possibly change consumer perceptions. It might also be good to extend this study to explore the significance and generalizability of our model across different product/service categories and online industries.

References
Brown, G. H. “Brand Loyalty – Fact or Fiction?” *Advertising Age* (23), 1952, pp. 53-55 (June 19); pp. 45-47 (June 30); pp. 54-56 (July 14); pp. 46-48 (July 28); pp. 56-58 (August 11); pp. 82-86 (October 6); pp. 76-79 (December 1).
Brown, G. H. “Brand Loyalty – Fact or Fiction?” *Advertising Age* (23), 26 January 1953, pp. 75-76.

1250


