IDEA GROUP PUBLISHING
701 E. Chocolate Avenue, Hershey PA 17033, USA
Tel: 717/533-8845; Fax 717/533-8661; URL-http://www.idea-group.com
ITP4450

STICKINESS: Implications for Web-Based Customer Loyalty Efforts

Supawadee Ingsriswang[1] and Guisseppi Forgionne[2]
Department of Information Systems, University of Maryland, Baltimore County 1000 Hilltop Circle, Baltimore, MD 21250
Tel. (410) 455-3206, Fax (410) 455-1073, E-mail: [1]ingsrisw@umbc.edu and [2]forgionn@umbc.edu

INTRODUCTION

The past few years have borne witness to a revolution in business with acceleration in the use of the World Wide Web to support or, in many cases, supplant traditional modes of marketing and selling products and services. The Internet consumer base is continually growing. According to a report conducted by Computer Industry Almanac, Inc. (www.c-i-a.com, 1999), 490 million people around the world will have online access by the year 2002. With the rapid increase in the number of online consumers, the managers and marketers are moving to exploit this opportunity to reach millions of customers worldwide. Between 1997-1999, Internet hosts grew from 16 million to over 72 million worldwide (www.isc.org, 2000). The explosive growth of websites raises the question to the Web designer and marketer about how to attract consumer attention to their sites and how to differentiate of their sites from other sites.

In the physical world, time and cost considerations make it difficult for people to change grocery stores for product selection, while searching a product on the Web generates quite low costs to the consumers. Consumers can switch to other Web sites or competitive URLs in seconds with minimal financial costs. Every commercial website is exploring a variety of efforts to hold their existing customers because acquiring new customers is expensive (Hanson, 2000). Web managers and marketers have been paying more attention to the "Stickiness" of websites (Anders 1999; Davenport 2000; Murphy 1999; O'Brien 1999; Pappas 1999). Some measurement companies, for instance, Media Metrix, and Neilsen/Netrating, reported the rank of the Web sites with a stickiness rating, which indicates how long the average user spent on a site in a period of time.

Stickiness is the same concept as customer loyalty. It is the competence of a web site to create both customer attraction and customer retention for the purpose of revenue or profitability. Customer attraction is related to how to attract and keep customers at the site whereas customer retention is the ability to retain customer loyalty. Some sites spent millions of dollars by combining many stickiness programs that attempt to hold their customers, but these investments may not be wisely made since not every method is profitable. Therefore, what makes a site sticky is debatable. Moreover, there are many possible strategies to achieve site stickiness. Web managers and marketers would benefit from reliable and consistent measuring tools for choosing the proper site alternative.

Although Web marketers monitor aggregate measures on Web traffic such as average time spent in order to determine the stickiness of a site, they gain little insight into the effectiveness of stickiness programs. For example, if the average time spent at a site is increasing monthly, is the site sticky? It is possible that each month the site attracts some new visitors who connect to the site and leave it on his/her screen for days while existing customers may be dropping out completely. In addition, the longer time spent at a site might be forged by the network delays at download time. Other traffic measures representing consumers' behavior should be considered as well. Beyond the traffic volumes, it is important to quantify how much revenues and profits are impacted as well as to understand the underlying consumer behavior.

In this paper, the concept of customer loyalty in traditional businesses is applied to digital products or services in order to describe a conceptual model of online stickiness. Using the conceptual model, we identify the measures that determine the stickiness of the website and describe the applications of the stickiness value.

STICKINESS AS CUSTOMER LOYALTY

The loyal customers, who repeat their purchases or visits persistently, are a valuable assets of a website. The goal of a sticky program is to establish a high level of customer loyalty by providing increased satisfaction and value to the customer. The increase of customer satisfaction and loyalty has a positive influence on long-term financial performance (Anderson, Fornell, and Lehmann 1994; Reichheld and Sasser 1990). To determine the long-term efficacy of a sticky program, Web marketers must assess the program's influence on customers' usage or purchase behavior and verify the cost effectiveness and profitability of the program.

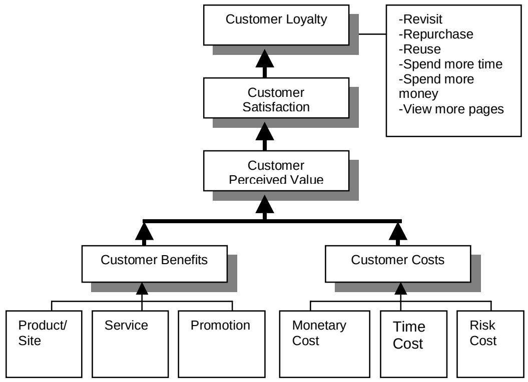
Customer loyalty has been a core element of marketing since the early eighties (Morgan & Hunt, 1994). The idea is to develop and maintain long-term relationships with customers by creating superior customer value and satisfaction. An understanding of current customers' behavior and their determinants is an important basis for the identification of optimal marketing actions.

A CONCEPTUAL MODEL OF CUSTOMER LOYALTY

Prior research in marketing has identified the key drivers of customer satisfaction and customer loyalty. It is widely known that customers determine their satisfaction via their perception. According to Engel el al's (1990) buying decision-making process, customers evaluate the product/service alternatives on the basis of the benefits and costs that satisfy their needs. The perceived value is the total utility the customers measures on each alternative available to them based on their requirement.

This paper appears in *Managing Information Technology in a Global Economy,* the proceedings of the Information Resources Management Association International Conference.

Figure 1 A Conceptual Model of Customer Loyalty



From Figure 1, we can see the determinants that drive perceived values, customer satisfaction and customer loyalty.

Drivers of Stickiness or Customer Loyalty

The perceived value depends on the benefit or quality of products/services that customers gain and the cost that customers pay, or

Perceived value = Customer Benefits – Customer Costs.

Customers would usually select and stay at the site providing high perceive value and satisfaction. In this section, the values of electronic commerce sites to consumers are in the following categories where customers interact with the site.

§ Product /Site

Before customers make a purchase, they must interact with the content posting on the e-commerce site. Forrest Research reported that content is the most important feature, which makes 75 percent of online consumers return to their favorite sites (Murphy, 1999). The quality of a site's content is related to:

o The Variety of Goods and Services

Jarvenpaa and Todd (1997) reported that the limited number of good or service offerings made most customers unsatisfied. To build stickiness, a predominant strategy used by several sites is to offer a wide range of services. There are a variety of services available at each sticky site including auction, communication ser vice (e.g. e-mail, voice mail, Internet access, chat room, homepage, Instant Messenger), search service (e.g. information, people), shopping mall, financial services (e.g. banking, insurance, brokerage,mortgage, mutual fund), entertainment and recreation services, (e.g. sport, game, travel, horoscope, movie, music) and so on.

o Freshness

The content of the website should provide accurate and up-to-date information available on demand at any time. As in publishing sites, the content should be up dated frequently and the previous series of newspapers, or magazines, should be archived at the site.

o Interface Usabability

Herschlag (1998) reported that 8% of the respondents don't shop online because the sites are too hard to use. According to Lohse and Spiller (1998), the user interface design features influence Web traffic and sales. The organization and navigation of Web pages are important factors of the website interface. Tilson et al (1998) and Rohn (1998) found that some helpful product organizations make it easy for participants to choose the required product. The design of the user interface should maximize the ease of use and maximize response time to users. In addition, the interface should be planned to encourage and stimulate customers to produce positive emotional responses leading to increases in purchases.

o Personalization

Perkowitz and Etzioni (1997) stated that good websites should adapt automatically by gaining knowledge from the user access pattern. Many websites attempt to generate Web pages in real time based on the needs of individual consumers. *Personalization* or *Customization* is a technique to adjust the site's presentation for an individual consumer. Most portal sites provide personalized options to visitors for creating and updating their preferences. At Excite (www.excite.com), users who personalized the site were likely to repeat their visit (Pappas, 1999). According to Fletcher Research, 68% of Web users who personalized an e-commerce site made a purchase from the site (Canaan, 1999).

§ Service

The service quality is a key competitive weapon of service providers on the Internet. For example, search engines must minimize the search and response time and maximize the accuracy, precision and reliability of search results (Hater and Hert, 1997; Losse and Paris, 1999), while the e-commerce site must also provide accurate order processing (Loshin, 1995). The values of service at a site are created from:

o Customer Interaction

In the digital world, providing a communication channel for customers is an important part of a *customer service* program because customers cannot interact directly with sales representatives. A survey conductedby NFO Interactive reported around 35% of 2,321 respondents would buy more from e-commerce sites if they could interact with online salespersons (Canaan,1999). Customer feedback provides valuable suggestions such as existing product shortcomings, and design strategies for new products and services. However, research shows that 40% of the surveyed sites did not respond at all to consumer e-mails (Rubric Inc., 1999). Responsiveness is one factor for customers to decide the service quality (Parasuraman, 1988). The communication channel as well as responding time affects customer satisfaction.

o Technology and Performance

The performance of any applications is dependent on the capability of the network, server hardware/software and client hardware/software. Speed is very critical for Web business. The site should speed up consumer interaction and response time. Moreover, if speed is sufficient, delivering 3D images, voice and video to users makes users feel better about the product.

o Reliability

Beside the performance, reliability is important for customers in using a website service. For example, if a customer tries to make a call at a free long distance call website, but never succeeds, the customer will not believe in the website's ability to deliver the service. Several technical errors such as a website not found, page not found, code error and server busy, can reduce the reliability of the website. Reliability also implies the consistency of website service performance as well as the accuracy of major functions of the website. Since the website promises to deliver the service at all times and to all places, the service at different time and different place should be performed consistently.

§ Promotion
Banner ads and user rewards are usually used to increase traffic at several sites (Davenport, 2000; Strauss and Frost, 1999). To bring customers to the sites, the rewards include coupons, redeemable points, rebates, free gifts, airline mileages, and cash payments, which may be given out as a promotion tool for simply visiting the site or performing some action on the site.

§ Monetary Cost
Price is an important element of the marketing mix, since it affects the consumers' product selection process directly. When consumers pay nothing, they easily try the product or service. Consumers also want the highest return on their investment. It means that consumers want to minimize the cost or price they pay for any products/services. As with commercial television and free print publication, most advertising supported websites offer free services to the consumers to increase their satisfaction. Pricing strategy also has been adapted from other business models; for example, a retailing site would set the lower price than physical stores and its competitive sites.

§ Time Cost
On the Internet, beyond the monetary cost, time is the critical cost for the customer. E-commerce sites act as self-service places where customers have to do every thing by themselves. Websites should minimize the time for any processes at the site such as access, search, and download so customers can focus on desired activities.

§ Risk Cost
o Privacy
Most online consumers are concerned about disclosing personal information. According to Hoffman, Novak and Peralta (1999), 94% of Web users have refused to provide information at a website and 40% have given false information.
o Security
Unsecured transmissions become a major concern for online consumers. During the back and forth data transmission between client and server on the Internet, there are many ways to break into a computer. One study reported that 21% of consumers would not buy things online because of the fear of the hackers (Krantz, 1998). Likewise, as cited by Strauss and Frost (1999), a study conducted for the Lycos Corporation by Cyberdialogue in 1998 reported that transaction security is the number one concern of all online users.

These perceived values consolidate into an overall satisfaction measure, which impacts customer loyalty. Some studies show that satisfied customers are not necessarily loyal customers (Gale 1997, Reicheld 1996), but there is a high probability that satisfied customers would be loyal. For instance, Bolton and Lemon (1999) showed that customers' usage of two continuously provided services depended on their prior satisfaction levels. Demographic and other information of customers may also affect their satisfaction. For example, the customer who has a long experience with the website will have more opportunities to have a bad experience with the site. In general, loyal customers will perform the following actions:

o Tend to revisit/repurchase/reuse
o Tend to spend more time at the site
o Tend to generate a large amount of revenue and profits for the site
o Recommend the website to others

STICKINESS MEASURES

Loyal customers are the target of the website and its stickiness programs. The conceptual model of customer loyalty indicates that customer loyalty is a kind of customer behavior. These characteristics can be used as the measures of stickiness with the following indicators.

§ Revisit/repurchase/reuse
The loyal customers should frequently visit, purchase or use service at the site. We can measure this behavior by the frequency of visits and the frequency of purchases.

§ Spend more time at the site
The loyal customers should spend a longer period of time at the site. The duration of visits and how many website features customers use can represent this customers' behavior.

§ Generate large amount of revenue and profits at the site
This behavior can be signified by the number of page views, number of ad exposures, number of clicks on ads, and the purchase amount during a visit.

§ Recommend the website to others
Many content provider sites provide an option for users to recommend the site to their friends. In these sites, the number of recommendations can be counted as well.

Remarkably, the duration of visits, the most popular measure for stickiness of websites, represents only one of many loyal behaviors. The longer duration of visits does not necessarily determine the higher number of page views, since customers could spend one hour on one page. Other relationships among loyal behavior measures are still in question. This may confirm that an aggregate only measure cannot tell whether the site is sticky.

Through loyal behaviors, the customers will generate high traffic and sales volumes with an increase in the revenue from the site. With the purpose of any businesses, the monetary value is the most frequently used to measure the effectiveness of the investments. We can measure the value stickiness as the profitability of the site.

$$\textit{Profit} = \textit{Revenue} - \textit{Cost} \tag{1}$$

Corresponding to the model of customer loyalty, the loyal customers tend to create or spend large amounts of money at the site. The revenue that customers generate for the site can be calculated from the volume of product bought or service used and the price of the product/service. In general, at the retailing sites,

$$\textit{Revenue} = \textit{Volume of product sold} \times \textit{Price} \tag{2}$$

whereas at the advertising based sites,

$$\textit{Revenue} = \textit{Volume of impressions or clicks on ads} \times \textit{Price.} \tag{3}$$

however, revenue at some sites might include both (2) and (3). Costs of the website can be calculated by,

$$\textit{Costs} = \textit{Volume of transactions} \times \textit{Cost per transaction.} \tag{4}$$

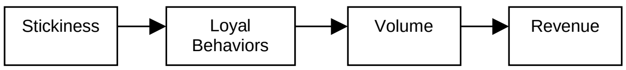
Based on the customer perception and satisfaction, the volume of transactions is determined by the stickiness of the site. While the benefit of the product, service and promotion and the cost or price to the customers are antecedents of their perception and satisfaction. Hence, we can formulate a function,

$$\textit{Volume} = f\,(\boldsymbol{\textit{Stickiness}}) \tag{5}$$

where ***Stickiness*** = *f* (*product, service, promotion, price).* (6)

It is clear that stickiness is the consequence of an appropriate marketing mix. In sum, the relationship between sticky features and revenue of a website will be as shown in Figure 2.

Figure 2 Stickiness as the driver of volume and revenue of the website



Based on our stickiness concept, the advertising supported site is a good example, since its revenue directly depends on the traffic volume (Rappa, 2000). At advertising supported sites, larger volumes of impressions and higher click-through rates lead to greater revenues. The number of impressions and the click-through rate will be determined by customer behavior such as the frequency of visits, the number of page views, the duration of visits and the number of features used. As shown above, the loyal behaviors and the transaction volume at a website are driven by site stickiness. If Web managers can measure site stickiness determinants and capture the site stickiness value, they can assess the effectiveness of their site design.

USING STICKINESS MEASURES TO IMPROVE THE WEBSITE DESIGN

The conceptual model of customer loyalty and the proposed stickiness measures are designed to yield high levels of customer satisfaction, customer loyalty and profitability. Most designers only focus on functionality and usability, however developing an e-commerce site needs to consider marketability. The e-commerce site is a product in its own right. In electronic markets, customers have more opportunities to compare and select a site to shop as well as a product to buy. Then, we view a website development process as a product development process: preproduction, production and postproduction, as shown in Figure 3.

Figure 3 An iterative website development process

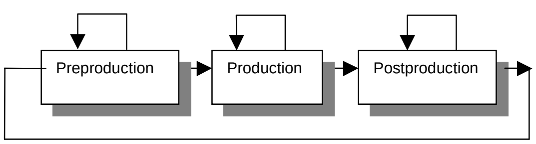


Figure 4 Stages in an iterative website development process

Stages	Website Development Process	Team Members
Preproduction	Website & Target Market definition - Planning - Analysis - Design	Web manager Web marketers Web designers Target Customers
Production	Implementation -Web application development -Pilot Trials	Web designers Web developers Web marketers Target Customers
Postproduction	-Evaluation & Maintenance -Promotion	Web marketers Web designers Web developers Customers

As illustrated in Figure 3 and 4, on an iterative website development, marketers and designers must work together in all stages. Each stage has iterations occur. The preproduction stage is to determine the definition of the website and whether any related website are available on the market. In addition, the target customers' needs and perceptions of the present related websites and the new website ideas are analyzed and used to refine the new website features. In the refinement process, features are approved or rejected based on target customers' perceptions and technology constraints. In the production stage, Web designers and developers implement the prototype of the website. The same target groups as in the previous stage will be shown the prototype. Again, target group's perceptions are collected and used to redesign the prototype. Once the website is launched, the postproduction stage starts. Advertising and promotion campaigns are dispatched to attract the customers to the site. Customers' behavior and perception are used to determine what features satisfy or dissatisfy the customers. Then, the process of redefine or redesign the website start again at the preproduction stage.

With this website development perspective, customer perceptions are very important in designing a marketable website. The stickiness measures proposed here, derived from customer perceptions, will support both the Web marketer and Web designer in tuning their website. Based on customer behavior, stickiness provides more detail to marketing data. Performing as a marketing response function, stickiness values suggest the need to develop the new product/service or redesign the existing products/services at the site. To be successful, a new product must create a superior stickiness value and a desired level of revenue and profitability for the site. On the Web design theme, stickiness acts as an evaluation function helping to focus the effect of site design. Stickiness measures can also be used to indicate customer interests, so the Web designer can adapt the site feature and interface based on the interest of the customer. Overall, using the stickiness measures, the Web marketers and designers can adapt and create the combinations of Web-based marketing strategies to yield a high level of customer loyalty.

CONCLUSIONS

In the electronic business environment, competition between Web sites to keep their customers is intensifying. Stickiness is one of the Web attributes for measuring the effectiveness of the site. As with the concept of customer loyalty, stickiness points out how well a Web site can keep their customers. The rates of success in a loyalty program or sticky drivers certainly vary by the business model and by each website. The development and maintenance of the stickiness of the Web site requires a systematic measuring and understanding of customer satisfaction and loyalty.

With regard to the effectiveness of the stickiness/web-based loyalty programs on the customer behavior, the Web manager can justify these programs based upon their ability to increase customer satisfaction and to encourage customers to use more products and services at the site. Many websites suffer from a low ability to hold their customer target. Customer satisfaction, loyalty and stickiness measurement can uncover the customer's preferences and what caused their customer to leave. Once the Web managers can identify the potential features of stickiness, they can indicate the appropriate marketing instruments and web-based techniques to develop and maintain the customer relationship. Moreover, many web sites have the same target group, and the Web manager must be aware of the present and future competition.

Stickiness measurements can provide the information supporting the website investment. Through a stickiness analysis, the Web marketer can demonstrate the value of the product/services they provide and can determine the return on investment of those services to the Web manager. By modeling the stickiness concept, it is possible to predict the revenue impact of product and service improvements. Furthermore, improvements in the loyalty of profitable customers can improve market share and reduce marketing and operating costs.

REFERENCES

References are available on request from the authors.