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Service Quality of a Choiceboard System: An Experimental Investigation

Pratyush Bharati
University of Massachusetts

Abhijit Chaudhury
Bryant College

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University of Massachusetts
Pratyush.Bharati@umb.edu

Abhijit Chaudhury
Bryant College
achaudhu@bryant.edu

Abstract

The increasing popularity of e-businesses has resulted in the proliferation of internet-based self-services. This research endeavors to better understand a self-service called the Choiceboard. The focus of the research will be to investigate how service quality and, hence, the intention to use is being impacted by the Choiceboard system. The hypotheses will be tested using an experiment.

Keywords: E-Commerce, service quality, e-business, customer relationship management (CRM), strategic information systems

Introduction

The Internet is transforming the supplier-customer interaction drastically. The increasing popularity of e-businesses has resulted in the proliferation of internet-based self-services. Not only have e-businesses become a big enabler of self-service but customers have also embraced self-service (Kalakota and Robinson, 1999). Especially, we have witnessed the success of e-businesses like Dell online, where customers can design their own computers with Dell's on-line configurator. This phenomenon is not limited to the computer industry and is becoming more and more prevalent in other industries.
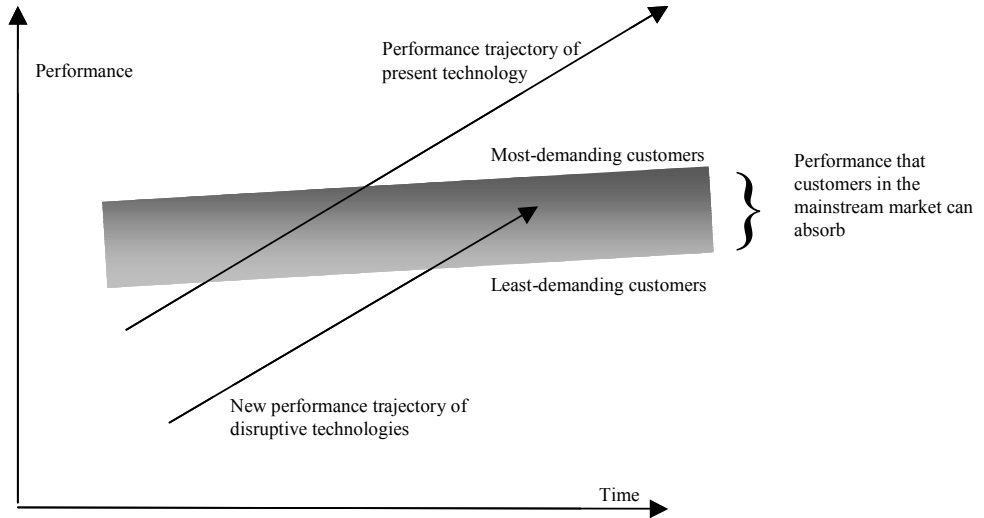
The innovation that is catalyzing this shift is what is called the Choiceboard. Choiceboards are interactive, on-line systems that allow individual customers to design their own products by choosing from a menu of attributes, components, prices, and delivery options. In different types of markets, customers will soon be able to describe exactly what they want, and suppliers will be able to deliver the desired product or service (Slywotzky, 2000).

This research endeavors to better understand the Choiceboard phenomenon. The focus of the research will be to understand how service quality and, hence, the intention to use is being impacted by the Choiceboard system. This system has the potential of being a disruptive technology as it drastically changes the relationship between the supplier and customer.

Choiceboard as a Disruptive Innovation

In the Choiceboard system, the customer's role shifts from a passive recipient to an active designer. For most of the twentieth century, customers were "product takers" and "price takers," accepting suppliers' goods at suppliers' prices. In a Choiceboard system the customers are no longer "product takers" (Slywotzky, 2000). Several powerful innovations like the Choiceboard have disrupted industries in the past. The statement "innovations that disrupted other industries did so by enabling a larger population of less-skilled people to do in a more convenient, less expensive setting things that historically could be performed only by expensive specialists …"(Christensen, Bohmer and Kenagy, 2000) holds true for Choiceboards.

The suppliers have tailored their products to suit the different segments of the customers but still the customers are forced to "settle for the best approximations of what they want". The Choiceboard system changes this and "customers are product takers no longer. They're product makers" (Slywotzky, 2000). Most of disruptive innovations in history have had a major impact. Bell's telephone let people communicate without the need for professional telegraph operators. On-line brokerages have made investing so inexpensive and convenient that even college students now actively manage their own portfolios (Christensen, Bohmer and Kenagy, 2000). The progress of disruptive innovations is shown in figure 1. It shows over time how present technologies cannot meet majority of customers' performance requirements and, therefore, disruptive technologies capture that market.

Performance

Performance trajectory of present technology

Most-demanding customers

Performance that customers in the mainstream market can absorb

Least-demanding customers

New performance trajectory of disruptive technologies

Time

Source: Christensen, Bohmer and Kenagy, 2000

Figure 1. The Progress of Disruptive Innovation

Developing the Conceptual Model

Choiceboards are already being used in several industries, although, they still involve less than 1% of the $30 trillion world economy. Dell's customers use the on-line configurator to "make" their own computers and Schwab's customers use the mutual-fund evaluator to design their own investment portfolios (Slywotzky, 2000). It is imperative to study how the service quality will differ when the on-line configurator is compared to another buying method. This research intends to explore this issue further by researching how Choiceboard systems would impact the service quality.

The conceptual model (figure 2) shows how different factors of the Choiceboard system will impact service quality. System quality, information quality and user support of the Choiceboard will directly impact service quality. IT characteristics of users will also directly impact service quality. The conceptual model is based on previous research done to study the impact of information technology on service quality (Bharati and Berg, 1999). This research is partially based on DeLone and McLean's (1992) taxonomy of information system success.
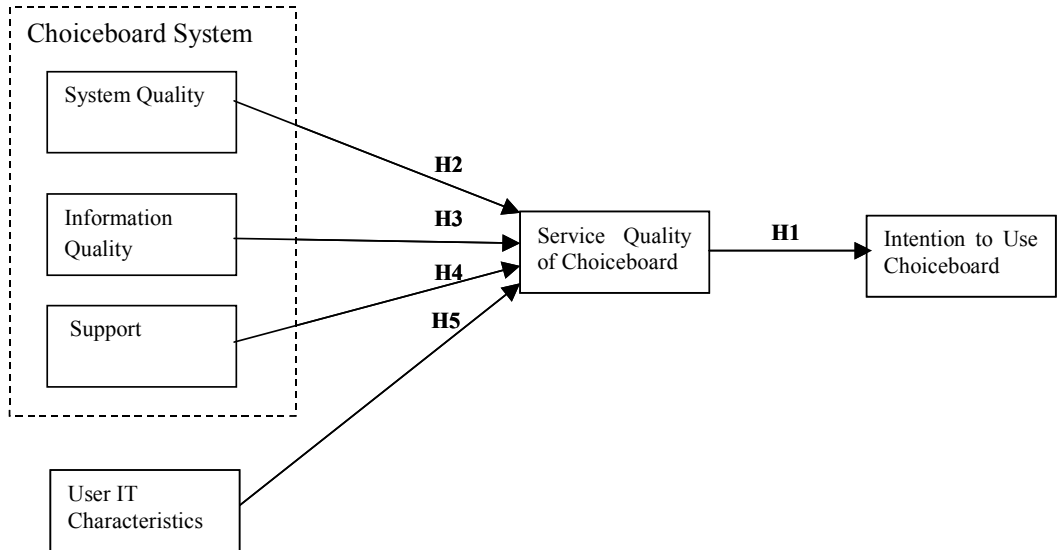
Choiceboard System

System Quality

Information Quality

Support

User IT Characteristics

H2

H3

H4

H5

Service Quality of Choiceboard

H1

Intention to Use Choiceboard

Figure 2. Conceptual Model

Service Quality of Choiceboard

Researchers have proposed various dimensions and approaches of service quality (Gronroos, 1982). The most widely used and accepted dimensions are the ones proposed by Parasuraman, Zeithaml, and Berry (1988). The initial ten dimensions have been reduced to five and, subsequently, been developed into an instrument (Parasuraman, Zeithaml, and Berry, 1988).

The gap model of service quality (Parasuraman, Zeithaml, and Berry, 1988) has been criticized because of some conceptual problems. At the theoretical level, the perception-minus-expectation measure of service quality has been criticized, as it does not portray the cognitive process very well (Carman, 1990; Van Dyke, Kappelman, and Prybutok, 1997). The perception only measure of service quality has been found theoretically and empirically superior to perception-minus-expectation measure of service quality. Literature (Babakus. and Boller, 1992; Cronin and Taylor, 1992; Parasuraman, Berry and Zeithaml, 1993), indicates that perceptions-only scores are superior to the perceptions-minus-expectations difference scores in terms of reliability, convergent validity, and predictive validity. Therefore, a perception only measure of service quality will be used.

Intention to Use Choiceboard

For the Choiceboard to be effective, the online service firms have to translate high service quality into increased intention to use. Service providers work on the assumption that providing quality services will lead to greater use of their service (Jacoby and Olson, 1985; Buzzell and Gale, 1987; Zeithaml, 1988; Berry et al., 1989). The link between service quality and intention to use was found to be significant in a study of self-service technology (Dabholkar, 1996).

> *Hypothesis 1*: Service quality of the Choiceboard system is directly and positively related to the intent to use the Choiceboard.

System Quality

System quality represents the quality of the information system itself. This quality is a function, broadly speaking, of hardware and software of the Choiceboard system. The quality of the system is manifested in the system's overall performance, which will be measured using user's perceptions. Perceptual measures such as ease of use (Belardo, Karwan and Wallace, 1982), and system reliability (Srinivasan, 1985) will be used.

> *Hypothesis 2*: System quality of the Choiceboard system is directly and positively related to service quality.

Information Quality

The information provided by the Choiceboard system is important. The quality of information has been discussed a lot in the IS literature. Gallagher (1974) has used user's perception of the value of information system to find the information quality of the system. In some studies, information quality has not been considered separately but as an integral part of User Satisfaction (Bailey and Pearson, 1983) or User Information Satisfaction (Iivari, 1987). In another study (Larcker and Lessig, 1980), the perceived importance and usableness of information is emphasized. Some researchers have proposed multiple information attributes, which reflect information system value (King and Epstein, 1983). Information quality has also been emphasized in studies on service quality (Berry and Parasuraman, 1997; Bharati and Berg, 1999). In most of the studies the user estimates the value of an information system. The measures of information quality that will be used are information importance, information usableness, and information relevance.

> *Hypothesis 3*: Information quality of the Choiceboard system is directly and positively related to service quality.

Support

The support section of Choiceboard system is also a provider of service to the users, namely technical support. This service is an integral part of the complete set of IS product and service provided by the Choiceboard system. Irrespective of how a user interacts with the Choiceboard system, the quality of technical support can influence the service quality. Technical support is of importance to the user, the potential customer. Since support is an integral part of the Choiceboard system, therefore, it should

impact service quality. Support responsiveness and reliability have been used to measure quality of support (Pitt, Watson and Kavan, 1995). These measures will be used for support of the Choiceboard system.

> *Hypothesis 4*: Support provided by the Choiceboard system is directly and positively related to service quality.

User IT Characteristics

User's perception of the Choiceboard system is a key factor in determining service quality. IT attitudes of the users, the feeling they have towards Choiceboards (Goodhue, 1986; Bailey and Pearson, 1983), and the experience they have had with information technology will constitute the factor User IT Characteristics.

> *Hypothesis 5*: IT characteristics of the Choiceboard system user is directly and positively related to service quality.

Future Research

We have developed a model that explains how a Choiceboard system will impact service quality and then the intention to use the Choiceboard. This model has been used to design an experiment to test our hypotheses. It has been suggested that a conceptual foundation be established before performing the experiments (Dickson, 1989). In that spirit, this paper has established the conceptual foundations for our research. Bharati (1998) has developed a theory and tested it using a case study and survey, now we are applying and testing it using an experiment on the Choiceboard. Previously, the experiments have been used to build theoretical systems and several studies have used this method for theory testing (Benbasat, 1989).

We are in the process of developing the task and experimental environment for the experiment. The experiment will require multiple treatment and random assignment of participants to treatments (Zmud, Olson, and Hauser, 1989). "True" experimental meet the criteria of multiple treatments, randomization, and experimental control and quasi experimental designs do not meet these three criteria but rather attempt to preserve as many of the properties of true experimentation as possible given the constraints (Zmud, Olson, and Hauser, 1989). Participants will be randomly assigned to the two groups of alternative purchasing methods, one of which will be the Choiceboard. We will also ensure that the order in which the participants encounter the technology is balanced (Mason, 1989). Interviews of users and pilot test of the instrument will be conducted before the finalization of the measurement instrument. Thereafter, the collected data will be analyzed to validate the hypotheses.

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