# Customer satisfaction and loyalty in online and offline environments

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## Abstract

We address the following questions that are becoming increasingly important to managers in service industries: Are the levels of customer satisfaction and loyalty for the same service different when customers choose the service online versus offline? If yes, what factors might explain these differences? How is the relationship between customer satisfaction and loyalty in the online environment different from that in the offline environment? We propose a conceptual framework and develop hypotheses about the effects of the online medium on customer satisfaction and loyalty and on the relationships between satisfaction and loyalty. We test the hypotheses through a simultaneous equation model using two data sets of online and offline customers of the lodging industry. The results are somewhat counterintuitive in that they show that whereas the levels of customer satisfaction for a service chosen online is the same as when it is chosen offline, loyalty to the service provider is higher when the service is chosen online than offline. We also find that loyalty and satisfaction have a reciprocal relationship such that each positively reinforces the other, and this relationship between overall satisfaction and loyalty is further strengthened online.
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## 1. Introduction

The rapid growth of online transactions in service industries raises important research questions about the levels of satisfaction and loyalty in the online environment, and the relationship between satisfaction and loyalty online relative to offline. Compared to the offline environment, the online environment offers more opportunities for interactive and personalized marketing (Wind and Rangaswamy, 2001). These opportunities may influence customer satisfaction and loyalty differently in the online environment vis-à-vis the offline environment.

Managers are concerned about how the online medium influences satisfaction and loyalty and the relationship between satisfaction and loyalty. Typically, online customers can more easily compare

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alternatives than offline customers, especially for functional products and services. A competing offer is just a few clicks away on the Internet. Because of these properties of the Web, many managers fear that the online medium may induce lower customer satisfaction and loyalty compared to the offline medium, and that increased satisfaction with a service may not lead to higher loyalty when that service is chosen online.

Some recent studies show that there may be systematic differences in customer attitudes and behavior for products and services chosen online versus offline. For example, price sensitivity may actually be lower online than offline (e.g., Degeratu, Rangaswamy, & Wu, 2000; Lynch & Ariely, 2000; Shankar, Rangaswamy, & Pusateri, 2001). Brand names (brand equity) could also have higher impact online than offline (Degeratu et al., 2000). Collectively, these studies suggest that a priori, customer satisfaction and loyalty for services may be different online (compared to offline), and not necessarily lower online. However, we do not know of any academic research that has carefully explored whether the online medium positively or negatively impacts customer satisfaction and loyalty (other things equal) and why.

Satisfaction and loyalty are not surrogates for each other (Bloemer & Kasper, 1995; Oliver, 1999). It is possible for a customer to be loyal without being highly satisfied (e.g., when there are few other choices) and to be highly satisfied and yet not be loyal (e.g., when many alternatives are available). Firms need to gain a better understanding of the relationship between satisfaction and loyalty in the online environment to allocate their online marketing efforts between satisfaction initiatives and loyalty programs. If, for example, the firm finds that loyalty is associated with increased satisfaction, it could directly focus on enhancing its loyalty programs.

In this paper, we address the following questions: (1) For a given service, other things equal, are the *levels of customer satisfaction and loyalty* different when the service is chosen online as compared to offline? If yes, what factors might explain these differences? (2) Is *the relationship between satisfaction and loyalty* stronger or weaker online compared to the offline environment? To answer these questions, we develop a set of hypotheses based on a conceptual

framework. To test the hypotheses, we formulate simultaneous equation models and estimate them using data from two sets of online and offline samples in the lodging sector of the travel industry. An important characteristic of industries such as online travel, entertainment (e.g., movie, theater, and concert tickets), and restaurant is that regardless of whether customers choose the service provider online or offline, the actual service is experienced by the customer offline. This characteristic enables us to isolate the effects of the medium on satisfaction, separate from the effects of service attributes.

Prior research studies on satisfaction and loyalty have primarily been conducted in the *offline* environment. We extend previous research in many ways. First, to our knowledge, ours is the first empirical study to compare the effects of the medium (online versus offline) on customer satisfaction, loyalty, and the relationship between satisfaction and loyalty. Second, we study the reciprocal relationship between customer satisfaction and loyalty that offers the potential for deeper insights into the nature of the relationship between these constructs. We also empirically test this reciprocal relationship. Much prior research has focused on the impact of customer satisfaction on loyalty, but not vice-versa. Third, unlike previous studies that have generally focused on action/behavioral loyalty, we focus explicitly on *attitudinal loyalty* to the service provider. Attitudinal loyalty is similar to affective/conative loyalty proposed by Oliver (1999) and represents a higher-order, or long-term, commitment of a customer to the organization, which cannot be inferred by merely observing customer repeat purchase behavior. Customer retention can occur without attitudinal loyalty, if for example, the customers are indifferent, or there are no other viable choices in the market.

## 2. Conceptual framework and research hypotheses

Consistent with Oliver (1999), we define satisfaction as the perception of pleasurable fulfillment of a service, and loyalty as deep commitment to the service provider. We focus on attitudinal loyalty, rather than on behavioral loyalty (Day, 1969; Dick & Basu, 1994) for the following reasons. A behaviorally loyal customer may be spuriously loyal, that is,

stay with an organization or service provider until he/she can find some better alternative in the marketplace (Dick & Basu, 1994). An attitudinally loyal customer, on the other hand, has some attachment or commitment to the organization and is not easily swayed by a slightly more attractive alternative. Attitudinal loyalty not only indicates higher repurchase intent, but also resistance to counter-persuasion, resistance to adverse expert opinion, willingness to pay a price premium, and willingness to recommend the service provider to others.

We selected the travel industry as the context for our study for three reasons: (1) Although people can make travel choices (reservations) online, they still have to experience the service offline. Therefore, the actual service encounter itself is no different if the same service provider and service options are chosen online or offline. (2) The travel industry is one of the largest industries online and has had a relatively long history of online presence. Thus, many people are comfortable making travel choices online. (3) People make travel choices both online and offline, as compared to a pure online service provider like Yahoo, which has no direct offline equivalent. This allows us to compare online satisfaction and loyalty with offline satisfaction and loyalty for the same service.

We develop hypotheses about the effects of constructs focal to our research, namely, the direct effect of the online medium on service encounter satisfaction, overall satisfaction, and loyalty. We also develop hypotheses about the relationship between satisfaction and loyalty and the differential effects of various factors such as ease of obtaining information and frequency of use, online relative to offline. In developing the hypotheses, we primarily draw upon behavioral decision theory that examines tradeoffs between cognitive effort deployed and the quality or accuracy of the decisions (choices) that consumers make (Johnson & Payne, 1985; Johnson, Bellman, & Lohse, 2002). We also predict the effects of control variables such as website factors, service attributes, and prior experience with the service, on satisfaction and loyalty.

Fig. 1 summarizes the conceptual model of how the online medium influences customer satisfaction and loyalty. The figure includes the focal constructs as well as control variables. Our main thesis is that satisfaction, loyalty and their relationship differ online
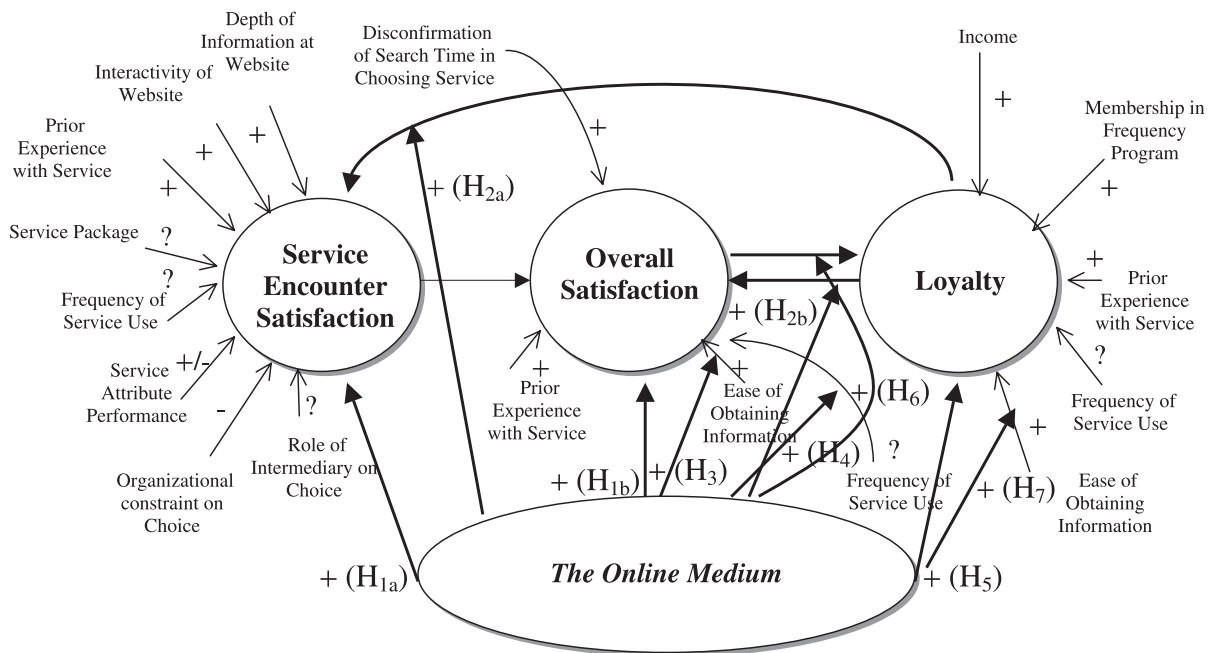


Fig. 1. Conceptual model of the online medium and the relationship between customer satisfaction and loyalty.

from offline because the same customers could make different choices online versus offline in the same decision situation. We now describe each of the constructs used in the study.

## 2.1. Drivers of customer satisfaction

We examine two types of customer satisfaction, namely, service encounter satisfaction and overall customer satisfaction. Service encounter satisfaction is transaction-specific, whereas overall customer satisfaction is relationship-specific, that is, overall satisfaction is the cumulative effect of a set of discrete service encounters or transactions with the service provider over a period of time (Bitner & Hubbert, 1994; Oliver, 1997; Rust & Oliver, 1994). Although these two types of satisfaction are related, it is important to recognize them as distinct constructs because some of the factors influencing them may be different. For example, service encounter satisfaction is more likely to depend on performance on specific attributes of the service encounter (e.g., Was the price consistent with expectation?), whereas overall satisfaction is more likely to depend on factors that occur across transactions (e.g., Is it easy to shop for this service?).

Table 1 summarizes several previous studies of the determinants of customer satisfaction. Based on these studies, we expect that customer satisfaction may be influenced by service provider performance on various service attributes (e.g., location of a hotel and its reputation), customers' prior experience with the service, their frequency of service use, disconfirmation of time spent choosing a service (e.g., whether it took longer or shorter than expected to make a choice), and ease of obtaining information about the service. We also argue, for reasons discussed below, that loyalty to the service provider also impacts customer satisfaction. These factors should apply to both online and offline environments. Below, we elaborate on each of the factors affecting customer satisfaction.

### 2.1.1. Focal constructs

*2.1.1.1. Direct (main) effect of the online medium (+).* The online medium has several distinctive features that may directly impact both service encounter

Table 1
Selected empirical research on determinants of customer satisfaction (offline)

| Independent variable | Key references | Context |
|---|---|---|
| Ease of obtaining information | Oliva et al. (1992) | General electric supply |
| Frequency of use | Bolton and Lemon (1999) | Television entertainment and cellular phone service |
| | Vredenburg and Wee (1986) | Autos |
| Attribute-level performance | Bearden and Teel (1983) | Auto repair service |
| | Bolton and Drew (1991) | Telephone service |
| | Mittal et al. (1998) | Health care and automobiles |
| | Oliva et al. (1992) | General electric supply |
| | Oliver (1993) | Autos and academic course |
| | Spreng et al. (1996) | Camcorders |
| | Meuter et al. (2000) | Self-service technologies |
| Prior experience | Bolton and Drew (1991) | Telephone service |
| | Cadotte, Woodruff, and Jenkins (1987) | Restaurant dining |
| | Vredenburg and Wee (1986) | Autos |

satisfaction and overall satisfaction. There are several reasons why the online medium influences customer satisfaction in a different way than the offline medium.

• Similar to other self-service technologies (SST), the online medium could improve the shopping process by enabling customers to sort (e.g., sort hotel rooms by price, miles from nearest airport, etc.) and group information (e.g., categorize hotels by quality rating), by increasing the number of options available (e.g., number of different hotels available near a given location), and by enabling customers to access peer opinions and ratings (Meuter, Ostrom, Roundtree, & Bitner, 2000). Thus it is likely that, for the same customer, online and offline decisions take place under different sets of information. Potentially, there is more information available online. With more available information, customers are likely to devote more cognitive effort to their decision processes because they can see the potential for realizing addi-

tional benefits (e.g., more informed or improved choices; lower prices) through additional effort (Johnson & Payne, 1985). Additional information (possibly in conjunction with more effort) will improve the quality of the choices that customers make, which in turn, is likely to result in a service experience that delivers higher satisfaction when the choices are made online than offline.

• The online shopping experience could also alter customer expectations about the services—if they have more information (including visual information) beforehand, they know what type of service they will get and are less likely to be surprised or angry at the service received, than when they make a choice offline. This suggests less disconfirmation with expectations (i.e., lower positive or negative disconfirmation), which should also result in greater satisfaction than when the choice is made offline.

• It is also possible that the online environment could decrease satisfaction because of the perceived lack of privacy and financial security, perceived lack of human contact, failure of technology, and poor design of interface (Meuter et al., 2000).

The direct effect of the online medium on customer satisfaction would depend on the net effect of these sources of satisfaction and dissatisfaction and is an empirical issue. However, we offer the following hypotheses a priori as our best judgments of the directionality of the combined effects of the medium on satisfaction.

**H$_{1a}$:** Customers who choose a service online are more likely to have a higher level of *service encounter* satisfaction than those who choose offline.

**H$_{1b}$:** Customers who choose a service online are more likely to have a higher level of *overall* satisfaction than those who choose offline.

*2.1.1.2. Loyalty (+).* A loyal customer is more likely to find the service encounter and the overall experience with a service provider more satisfying than a nonloyal customer. Although previous research has not viewed loyalty as an explanatory variable of satisfaction, prospect theory (Kahneman & Tversky, 1979) offers a rationale for why loyal customers may be more satisfied than nonloyal customers (see also, Mittal, Ross, & Baldasare, 1998). According to this theory, losses loom larger than gains. In the context of

the relationship between loyalty and satisfaction, this theory suggests that if loyal customers have a negative experience and become dissatisfied with a service provider, then they might gain by switching to a new provider. However, by switching they will incur loss in the form of loyalty benefits (e.g., emotional loss, rewards program) or face a potentially unfamiliar service encounter. Compared to nonloyal customers, loyal customers may perceive the loss to be larger than the short-term gain of moving to a new service provider. Research reported by Ahluwalia, Unnava, and Burnkrant (1999) provides further support for the loyalty–satisfaction relationship. They find that loyal customers are much less susceptible to negative information about a product than are nonloyal customers.

With respect to online customers, they recognize that they have chosen their favored service provider even when confronted with a large number of other options that were just a click away. Thus, they may feel partly responsible if the chosen service does not fully live up to their expectations, thereby mitigating the impact of dissatisfying experiences. Finally, some website features (e.g., information on related services, better use of rewards, and personalization) allow loyal online shoppers to derive greater utility and be more satisfied, as compared to shopping through the offline medium which offers limited pre-consumption interactions with the service provider. Taken together, these arguments lead to the following hypotheses.

**H$_{2a}$:** The positive effect of loyalty on *service encounter* satisfaction with that service provider is greater for customers who choose online than it is for those who choose offline.

**H$_{2b}$:** The positive effect of loyalty on *overall* satisfaction with that service provider is greater for customers who choose online than it is for those who choose offline.

*2.1.1.3. Ease of obtaining information (+).* Overall customer satisfaction may also depend on the ease with which information relevant to a particular customer can be obtained while choosing the service provider (Oliva, Oliver, & MacMillan, 1992). With more relevant information, customers make better decisions leading to higher satisfaction. Easier access to information also typically increases customer satisfaction with the shopping process (unless there is

information overload), which could increase overall customer satisfaction with the service—i.e., there could be some carryover of (dis)satisfaction with the shopping process to (dis)satisfaction with the service provider.

The online medium could further enhance the positive effect of information access on overall satisfaction by making the information obtained more actionable in influencing choice (for example, the information could contain direct links to specific hotel properties), thus involving less cognitive effort online than offline. Also, for such services as hotels, which have a large number of search attributes (e.g., location, price, type of bed), it is easier to obtain information online than offline. For comparable levels of information access and use, the lower effort deployed online is likely to lead to greater satisfaction online than offline (Johnson & Payne, 1985; Meuter et al., 2000). These arguments suggest the following hypothesis.

**H₃:** The positive effect of ease of obtaining information on overall customer satisfaction for a service provider is higher for customers who choose the service online than it is for those who choose offline.

*2.1.1.4. Frequency of service use (+/−).* Usage frequency may impact both service encounter satisfaction and overall satisfaction (Bolton & Lemon, 1999; Vredenburg & Wee, 1986). Arguments can be made for both a positive and a negative relationship between usage frequency and satisfaction. Supporting a positive relationship is the argument that if customers use a service often, the repeated exposure to favorable service encounters may continually lead to higher satisfaction. Supporting a negative relationship is the concept of expectation-performance. When customers use a service often, they start to treat the benefits of the service as a given and expect additional benefits from the service provider overall, and in each service encounter. The raised expectations may lead to lower satisfaction. Prior studies have more commonly reported negative effects than positive effects.

The online medium could dampen this negative effect of usage frequency on overall satisfaction. Because the online medium generates expectations that are more consistent with the actual service levels (e.g., the availability of room views and other relevant

information while choosing a hotel), it mitigates problems associated with frequent users having higher expectations, and therefore, being potentially less satisfied with the service provider. These consistent expectations also lower the mental costs of online choices, improving both utility and satisfaction (Johnson & Payne, 1985). These arguments lead to the following hypothesis.

**H₄:** The negative effect of frequency of use on overall customer satisfaction for a service provider is lower for customers who choose the service online than it is for those who choose offline.

*2.1.2. Control variables*

*2.1.2.1. Service attribute performance (+/−).* The actual performance on various service attributes that a customer experiences during a service encounter influences customer satisfaction with that service (Bearden & Teel, 1983; Bolton & Drew, 1991; Mittal et al., 1998; Oliva et al., 1992; Oliver, 1993; Spreng, MacKenzie, & Olshavsky, 1996). Because the actual service levels may vary from one service encounter to another, we do not expect transaction-specific service attribute ratings to directly influence overall customer satisfaction, but we expect them to have an indirect effect on overall satisfaction through service encounter satisfaction. Attribute-level performance can influence satisfaction either positively or negatively. For example, the better the room amenities relative to customers' expectations the higher their satisfaction, whereas the higher the price relative to customers' expectations the lower their satisfaction.

*2.1.2.2. Prior experience (+).* We expect a customer's prior experiences with a service provider to strongly influence both satisfaction with the service encounter and overall satisfaction. Woodruff, Cadotte, and Jenkins (1983) argue that a favorable prior experience with a service provider increases the likelihood of a favorable evaluation of the current service encounter as well as the overall evaluation of the service provider by affecting their norms and expectations. They showed that customers' past experiences with restaurants affect their evaluations of subsequent dining experiences. In a study of the auto industry, Vredenburg and Wee (1986) found that favorable

prior experience resulted in higher satisfaction levels. Bolton and Drew (1991) showed that customers' prior attitudes influenced their current attitudes toward a telephone service. Thus, overall, the more favorable the prior experience the higher the satisfaction. Unlike *Frequency of service use*, which refers to the quantity of prior use of a service, *Prior experience* refers to the quality of previous experiences with the service provider.

*2.1.2.3. Organizational constraint on choice (−).* Service encounter satisfaction is likely to depend on whether the choice of the service on a particular occasion was restricted by organizational constraints. For example, customer satisfaction during a service encounter would be more positive if he/she chose the service provider than if his/her organization chose it.

*2.1.2.4. Role of intermediary in choice (?).* If an individual chooses a service after going through an intermediary such as a travel agent, he/she is likely to have different expectations about that service than if he/she chooses without that intermediary for that service encounter. The expectations could be higher or lower depending upon the influence of the intermediary. The different expectations will likely lead to a different assessment of satisfaction for the service encounter.

*2.1.2.5. Service package (?).* An individual's service encounter satisfaction with a service provider (e.g., hotel) may depend on whether the choice of the service was part of a package or bundle of services (e.g., travel package). Expectations of the service could be different if the choice was part of a package of services—e.g., part of the service experience could be attributed to the package.

*2.1.2.6. Disconfirmation of search time in choosing the service (+).* Disconfirmation theory suggests that overall satisfaction is likely to be lower when customers generally put in more effort than they *expected* to expend in choosing the service (Anderson & Sullivan, 1993; Oliver, 1980). If they actually do spend less time relative to their expectations, then we should see a higher level of *overall satisfaction*. However, if customers spend more time in choosing

a service than they expected to (regardless of the medium), they will be less satisfied because their outcome was worse than expected.

In addition to the focal constructs and control variables that we have identified above, specific characteristics of a website may further modify the effect of the online environment on service encounter satisfaction. In particular, we consider two factors: (1) interactivity of website, and (2) depth of information at the website.

*2.1.2.7. Interactivity of website (+).* Interactivity refers to the ability of websites to dynamically generate outputs based on customer queries and searches. A static website is likely to increase search effort for online shoppers, thereby decreasing their satisfaction. On the other hand, a well designed interactive website could generate higher satisfaction by providing greater control to customers to personalize the information search. Greater customer control of the shopping experience increases the pleasure and convenience of shopping, an important component of customer satisfaction (Marmorstein, Grewal, & Fisher, 1992). These arguments suggest that the customer's service encounter satisfaction is positively related to the degree of interactivity of the website from which the customers choose.

*2.1.2.8. Depth of information at the website (+).* Websites can offer more information at the point of choice, thereby helping customers make better choices. Some websites have multiple layers of web pages with detailed information. If the information is multi-layered and rich, customers will tend to value the service encounter more than when the information is very superficial (Glazer, 1991). Thus, a customer's service encounter satisfaction is positively related to the depth of information available at the website (in our study, the service provider's site) from which the service is chosen.

Among the control variables that influence service encounter satisfaction, only prior experience impacts overall satisfaction. The remaining variables are specific to a service encounter. Therefore, we do not include them as potential drivers of overall satisfaction. Finally, note that we predict a positive effect of service encounter satisfaction on overall satisfaction because overall satisfaction is driven by satisfaction

from a series of service encounters (Bitner & Hubbert, 1994; Oliver, 1997; Rust & Oliver, 1994).

## 2.2. Drivers of loyalty

In Fig. 1, we have summarized the drivers of loyalty in a service industry, namely, the medium, overall customer satisfaction, ease of obtaining information, frequency of use, prior experience with service provider, membership in frequency program, and income. These factors are particularly applicable to the travel industry (Pritchard & Howard, 1997). We discuss the effects of each of these factors below.

### 2.2.1. Focal constructs

*2.2.1.1. Direct (main) effect of the online medium (+).* As suggested earlier, other things being equal, when customers make a service choice online, the resulting service is more likely to meet their expectations. Because the Web facilitates information search, we expect the customer to be better informed about the service levels to expect, and is less likely to be surprised (positively or negatively) by the services received when choosing online than offline. As a result, the customer's confidence in the service provider increases, which builds "fortitude" that prevents encroachment by competitive brands (Oliver, 1999). Further, customers may bookmark the URL of service providers when they have increased confidence in a service provider (i.e., reduce the consideration set), which makes it easier to find the same provider during future purchase occasions. The online medium also allows the customer to inspect more fully the available choices (e.g., pictures of hotels) than the offline medium. This makes it easier for a customer to learn about available options faster online than offline, which could result in "cognitive lock-in" to the selected service provider by making it easier for the customer to deal with that service provider than with other providers (Johnson et al., 2002). Finally, the ability to choose service providers on a 24/7 basis lowers the probability that the customer would go to another service provider simply because of limited access to his or her preferred service provider.

On the other hand, one could also argue that the online medium facilitates easier comparison of alternatives and allows faster propagation of any negative

word-of-mouth than the offline medium. These factors could increase the consideration sets of customers, thereby increasing the chances that customers gain more information/positive attitude toward competing services, and loss of loyalty to the focal service. However, since service failures typically constitute a small proportion of all service encounters, we expect the positive influences of these factors to dominate the negative influences. Indeed, a significant majority of customers prefer to reduce the number of items they consider online even when there are a large number of alternatives (Wu & Rangaswamy, in press). In sum, we expect the online medium to directly enhance customer loyalty, which we state in the form of the following hypothesis.

**H5:** Other things equal, loyalty to the service provider is higher when the service is chosen online than offline.

*2.2.1.2. Overall customer satisfaction (+).* Customers' loyalty to a service provider is influenced by their overall satisfaction with that provider. Most prior research has found qualified support for a positive satisfaction–customer retention relationship (Rust & Zahorik, 1993). Bolton (1998) found that the duration of a relationship between a customer and a service provider is longer when the customer is satisfied. Crosby and Stephens (1987) found that prior satisfaction increases the likelihood of a customer renewing her insurance policy. Rust, Zeithaml, and Lemon (2000) propose that the relationship between satisfaction and loyalty is positive, i.e., the more satisfied customers are with a service provider the more loyal they are to the service provider. Reicheld (1996), however, suggests that satisfaction is significantly related to loyalty only at very high levels of satisfaction. Therefore, the exact nature of the relationship between overall satisfaction and loyalty is an empirical issue.

At the same time, we expect overall customer satisfaction to have stronger effect on loyalty online than offline. One reason for this differential effect is that when customers are satisfied with a service provider online, they could more readily bookmark the website, make the choice 24×7, and even store or place a future order with the service provider. Thus, they have to spend less effort online for making a choice decision

of roughly the same quality as their previous choices. Thus, the online medium intensifies the relationship between satisfaction and loyalty (Johnson & Payne, 1985). A further reason for the online medium to reinforce the relationship between satisfaction and loyalty is that a satisfied customer could more easily locate the same service even in an unfamiliar context (e.g., a favorite hotel chain in a new city). These arguments lead to the following hypothesis.

**H$_6$:** The positive effect of overall satisfaction on loyalty to a service provider is greater for customers who choose the service online than it is for those who choose offline.

*2.2.1.3. Ease of obtaining information (+).* Like overall customer satisfaction, loyalty may also depend on the ease with which relevant information can be obtained while choosing the service provider. Easier access to information typically reinforces the tendency to go back to a preferred service provider (Oliver, 1999). As we suggested earlier, for products such as hotels that have a large number of search attributes, it is easier to obtain information online than offline. Ease of obtaining information also increases customer learning and may lead to greater cognitive lock-in to the service online than offline (Johnson et al., 2002). Thus, we expect higher loyalty online due to this factor. This reasoning leads to H$_7$.

**H$_7$:** The positive effect of ease of obtaining information on loyalty for a service provider is higher for customers who choose the service online than it is for those who choose offline.

### 2.2.2. Control variables

*2.2.2.1. Prior experience (+).* A customer who has a favorable prior experience with a service provider will likely be loyal to that service provider (Reicheld, 1996). This effect is likely to be higher in the online environment because it is more convenient and faster to choose the same service online than offline (e.g., through the use of bookmarks).

*2.2.2.2. Frequency of service use (?).* Both positive and negative relationships between frequency of use and loyalty are possible (Rust et al., 2000). It is not clear either whether the effect of frequency of use on loyalty in the online environment will be any different from that in the offline environment.

*2.2.2.3. Membership in frequency program (+).* If a person is a member of a service provider's frequency program, he/she typically benefits more by choosing the service provider than if he/she is not a member. This aspect is likely to be associated with greater loyalty to the service provider.

*2.2.2.4. Income (+).* An individual's income level may influence his/her loyalty to a service provider. Customers with lower discretionary incomes would be willing to do more price-comparisons and be less loyal to a service provider than those with higher incomes. Also, higher-income individuals typically have more time constraints and are more likely to stick to the same service provider.

## 3. Data

### 3.1. Data collection procedure

To test our hypotheses, we collected two sets of data in the lodging sector of the travel services industry, which comprises about 35% of online consumer sales (Comscore Report, 2002). These data sets are: (1) a sample of customers who used *both* an online (i.e., a website) and an offline medium (e.g., a travel agent or hotel reservation desk) for making two different hotel reservations (Data set 1), and (2) separate samples of customers of a single hotel chain (Data set 2), one sample of customers who made reservations online and another sample which made reservations offline.

Our use of the two different data sets in the same study is similar to developing multiple models (e.g., Silk & Urban, 1978) and conducting multiple experiments in consumer behavior research to assess convergence in results and insights. Data set 1 is akin to a within-subjects design, whereas Data set 2 is akin to a between-subjects design in an experimental study. In Data set 1, we have the advantage of focusing on the effect of the online medium relative to the offline medium for the same customer, thereby eliminating the variance due to differences in the online and

offline populations. In Data set 2, we have the advantage of having an identical service provider for both the online and offline samples, which reduces variance due to services delivered.[3] Although we used identical questionnaires in both data sets, the questions in Data set 1 were applicable to any hotel chosen by the respondent, whereas the questions in Data set 2 were specific to Marriott hotels.[4] Further, in Data set 1, the respondent answered the set of questions twice, once with respect to his/her most recent online reservation and once with respect to his/her most recent offline reservation.[5] All respondents were provided identical incentives to participate, in the form of 500 frequent reward points for a member hotel of HSMAI and for Marriott hotel in Data sets 1 and 2, respectively.

### 3.1.1. Data set 1

We collected primary data by surveying a random sample of hotel customers using a list provided by the Hospitality Sales and Marketing Association International. Customers in this sample were representative of customers who chose hotels in *both* the online and offline media. We received 144 usable responses from a sample of 1000 customers who were randomly selected from the list and mailed questionnaires (a response rate of 14.4%). This sample contained only those who had chosen a hotel both online and offline. The same respondents provided data for their most recent offline and online reservations.

The online and offline questionnaires included items on shopping behavior, choices, attitudes, measures of the hypothesized factors, and demographics. The questions relating to factors common to both the online and offline reservations were identical in the

two questionnaires. In addition, the online questionnaire included items on website factors. Most of the questions related to the most recent service encounter. This way, we were able to elicit attitudes with respect to a specific experience. To ensure that the information search undertaken by the respondent is done within a single medium (online or offline), we included a screening question regarding the medium from which the respondent obtained information.

### 3.1.2. Data set 2

We obtained primary data from both online and offline customers of Marriott International. The online respondents chose a Marriott hotel on the Internet and the offline respondents chose a Marriott hotel using conventional offline methods (e.g., travel agents or toll-free telephone number). We screened the offline customers, and none of them had any prior online reservation experience. By having two separate samples, we are able to compare the attitudes and behaviors of populations that differ primarily in the medium they use to make hotel reservations.

The offline sample consisted of respondents from a random sample of 2000, generated from the population of 12 million customers of Marriott International's customer database, who were mailed the questionnaire. For the online sample, we posted the survey at Marriott's website with a ''New'' tag and requested that the online visitors fill out the survey. Note that it is extremely difficult to achieve random sampling on the Internet because of the lack of a sampling frame—there is no list of all Internet users or even a list of potential visitors to a site, nor is there an online equivalent to random digit dialing. However, it is worth noting that online surveys typically elicit responses from a reasonably representative sample of the universe of online shoppers of a given product. This is because those who are likely to shop online for a product also tend to be the ones who respond to online surveys on the product (Intelliquest, 1997).

We collected 190 usable responses from the online survey and 403 usable responses from the offline survey, which represented a response rate of about 20.2%. As is well recognized, the online population is younger, on average, than the general population. Of the responses we obtained from the offline surveys, we selected the first 272 that allowed us to closely match the online sample in demographics. This sam-

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[3] Note that for all customers in our study, part of the service encounter occurs during the choice/reservation process but the primary service experience occurs at the hotel.

[4] In Data set 1, to control for order bias in answering online and offline questions, we randomly chose one half of the sample to answer online questions first, while the other half of the sample were asked to answer offline questions first.

[5] To ensure that differences in the recency of responses between online and offline respondents do not bias the results, we take into account in our analyses, the differences in the frequency of shopping between the samples. Even so, we analyzed the time lag between the date of response and that of the most recent purchase (hotel stay). It is not significantly different across the online and offline samples in Data sets 1 and 2.

Table 2
Comparison of online and offline sample demographics

| Demographic variable and category | Data set 1, % of sample, N=144 | Data set 2, % of online sample, N=190 | Data set 2, % of offline sample (unmatched), N=403 | Data set 2, % of offline sample (matched), N=272 |
|---|---|---|---|---|
| *Sex* | | | | |
| Female | 26 | 24 | 23 | 23 |
| | | | | |
| *Age* | | | | |
| 18−34 | 33 | 22 | 17 | 19 |
| 35−54 | 58 | 66 | 63 | 70 |
| 55 and above | 9 | 12 | 20 | 11 |
| | | | | |
| *Education* | | | | |
| No college | 15 | 3 | 2 | 2 |
| College | 40 | 55 | 49 | 55 |
| Post-graduate | 45 | 42 | 49 | 43 |
| | | | | |
| *Annual family income* | | | | |
| Below $60,000 | 21 | 11 | 14 | 15 |
| $60,000−$99,999 | 39 | 49 | 33 | 38 |
| $100,000 and above | 40 | 40 | 53 | 47 |

ple formed the matched offline sample. To match the online and offline samples on demographics, therefore, we dropped several respondents in the older age groups from the original offline sample. Instead of using a simple random sample to identify respondents to be dropped, we chose to retain respondents in the order in which we received their completed surveys—keeping respondents who sent their surveys early. We did this because early respondents are more likely to have a "response tendency" similar to those visitors to a website who choose to fill out the online questionnaire (Intelliquest, 1997).[6] Therefore, the matched offline sample allowed us to control for some observable individual differences and compare the attitudes and behaviors of populations that differed primarily with regard to the medium they used to make reservations.[7]

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[6] Even so, we subsequently reanalyzed our data using a simple random sample to identify the respondents to be dropped, but the results of our empirical analysis were not much different.

[7] We were not able to collect multiple-item measures for some of our constructs because of questionnaire length restrictions. There were several other questions (not directly relevant to our study) that were also included in the survey and were driven by the management needs of HSMAI and Marriott in Data sets 1 and 2, respectively. Lack of multiple-item measures is not necessarily disadvantageous in services research (Drolet and Morrison, 2001).

Table 2 summarizes the demographics of the online and offline samples in both data sets.

In Data set 1, about a quarter of the respondents were women, 58% were in the 35–54 age group, 85% had college education or above, and about 79% had annual family income of $60,000 or above. In Data set 2, comparing the online sample with the *unmatched* or naturally occurring offline sample, we see that the samples are very similar in terms of gender composition, proportion of 35–54 age group, and the percentage of college-educated members. However, on average, online customers are younger, less educated, and less affluent than the unmatched offline customers. Table 2 also summarizes the characteristics of the offline *matched* samples in Data set 2 that we used for all our data analyses. The online and matched offline samples are very comparable in terms of gender distribution, age, education level, and annual family income.

Tables 3a and 3b summarize the variables we use in our analysis, their operationalizations, and their mean values for the samples in Data sets 1 and 2, respectively. The tables also indicate the variables whose mean values are significantly different online and offline.

Table 3c summarizes the correlations among the key variables in both the data sets. Several key correlations (e.g., between satisfaction and loyalty)

Table 3a

Operationalization, means and variances of variables in data set 1

| Variable | Operationalization | Online mean (Var) | Offline mean (Var) |
|---|---|---|---|
| Service encounter satisfaction (SESAT) | Expressed satisfaction on the most recent service encounter with the service provider (5-point scale: Very dissatisfied–Very satisfied) | 4.15 (0.49) | 4.14 (1.04) |
| Overall satisfaction (OVRSAT) | Expressed level of overall satisfaction with the service provider (7-point scale) | 5.32 (1.25) | 4.90* (2.16) |
| Loyalty (LOYAL) | Expressed degree of loyalty to the service provider (7-point scale) | 3.03 (1.96) | 2.78* (1.66) |
| Ease of obtaining information (EASINFO) | Average rating on the ease of obtaining information on several factors relevant for the choice of hotel (e.g., location, physical condition, etc.) on 5-point scale: "Very difficult to Very easy" | 3.66 (0.77) | 3.00*** (0.86) |
| Frequency of use (FREQUSE) | Expressed frequency of use for the product (scale ranging from "One stay every 3 months or more" to "One stay a week") | 4.26 (0.90) | 4.06 (1.46) |
| Rating on reputation (RATREP) | Assessment of reputation of the service provider (5-point scale: "Well below average" to "Well above average") | 3.85 (0.32) | 3.71 (0.58) |
| Rating on room amenities (RATROOM) | Assessment of room amenities on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.59 (0.55) | 3.51 (0.72) |
| Rating on customer service (RATSERV) | Assessment of customer service on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.62 (0.85) | 3.49 (1.02) |
| Rating on price (RATPRICE) | Assessment of price on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.44 (0.62) | 3.09** (0.96) |
| Rating on location (RATLOC) | Assessment of hotel location on the last service encounter (5-point scale: "Well below average" to "Well above average") | 4.00 (0.42) | 4.37** (0.47) |
| Rating on ease of reservations (RATEASE) | Assessment of ease of making reservations on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.62 (0.42) | 3.41 (0.37) |
| Prior experience (PREXP) | Perception of past experience with the service provider (5-point scale: "Well below average" to "Well above average") | 3.67 (0.23) | 3.33* (0.49) |
| Customer's disconfirmation of time to choose (TIMEDIFF) | Time "willing to spend" choosing a hotel less actual time typically spent (5-point scale ranging from "5 minutes or less" to "More than 60 minutes") | 0.17 (1.12) | 0.60*** (1.30) |
| Perceived interactivity of website (INTERACT) | Perception of interactivity of the website message (5-point scale: "Much worse than at other sites" to "Much better than at other sites") | 3.37 (1.04) | N/A |
| Perceived depth of information (DEPTH) | Perception of extent of website information relative to expectations (5-point scale: "Much worse than expected" to "Much better than expected") | 3.56 (0.88) | N/A |

  * Significantly different from online at 0.05 level.
 ** Significantly different from online at 0.01 level.
*** Significantly different from online at 0.001 level.

are higher online than offline. The satisfaction–loyalty correlation ranges from 0.42 to 0.52 across the samples.

Tables 3a–3c suggest remarkable similarities between the two data sets on most variables, even though the samples in these two data sets are

Table 3b
Operationalization, means and variances of variables in data set 2

| Variable | Operationalization | Online mean (Var) | Offline: unmatched mean (Var) | Offline: matched mean (Var) |
|---|---|---|---|---|
| Service encounter satisfaction (SESAT) | Expressed satisfaction on the most recent service encounter with the service provider (5-point scale: Very dissatisfied–Very satisfied) | 4.42 (0.69) | 4.39 (0.58) | 4.38 (0.62) |
| Overall satisfaction (OVRSAT) | Expressed level of overall satisfaction with the service provider (7-point scale) | 5.78 (1.46) | 5.70 (1.15) | 5.72 (1.02) |
| Loyalty (LOYAL) | Expressed degree of loyalty to the service provider (7-point scale) | 5.73 (2.23) | 5.20*** (1.92) | 5.26*** (1.77) |
| Ease of obtaining information (EASINFO) | Average rating on the ease of obtaining information on several factors relevant for the choice of hotel (e.g., location, physical condition, etc.) on 5-point scale: "Very difficult to Very easy" | 3.75 (0.35) | 3.79 (0.35) | 3.79 (0.39) |
| Frequency of use (FREQUSE) | Expressed frequency of use for the product (scale ranging from "One stay every 3 months or more to "One stay a week") | 2.35 (1.90) | 2.03** (1.53) | 2.10* (1.53) |
| Rating on reputation (RATREP) | Assessment of reputation of the service provider (5-point scale: "Well below average" to "Well above average") | 3.91 (0.73) | 3.92 (0.59) | 3.95 (0.51) |
| Rating on room amenities (RATROOM) | Assessment of room amenities on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.58 (0.83) | 3.58 (0.62) | 3.58 (0.62) |
| Rating on customer service (RATSERV) | Assessment of customer service on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.62 (0.89) | 3.67 (0.73) | 3.67 (0.80) |
| Rating on price (RATPRICE) | Assessment of price on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.37 (0.73) | 3.33 (0.71) | 3.32 (0.65) |
| Rating on location (RATLOC) | Assessment of hotel location on the last service encounter (5-point scale: "Well below average" to "Well above average") | 4.11 (0.68) | 4.15 (0.57) | 4.14 (0.60) |
| Rating on ease of reservations (RATEASE) | Assessment of ease of making reservations on the last service encounter (5-point scale: "Well below average" to "Well above average") | 3.89 (0.80) | 3.69** (0.83) | 3.65** (0.85) |
| Prior experience (PREXP) | Perception of past experience with the service provider (5-point scale: "Well below average" to "Well above average") | 3.71 (1.07) | 3.68 (0.88) | 3.67 (0.86) |
| Customer's disconfirmation of time to choose (TIMEDIFF) | Time "willing to spend" choosing a hotel less actual time typically spent (5-point scales ranging from "5 minutes or less" to "More than 60 minutes") | 0.16 (1.29) | 0.55*** (1.72) | 0.51** (1.73) |
| Perceived interactivity of message (INTERACT) | Perception of interactivity of the website message (5-point scale: "Much worse than at other sites" to "Much better than at other sites") | 3.71 (0.80) | N/A | N/A |
| Perceived depth of information (DEPTH) | Perception of extent of website information relative to expectations (5-point scale: "Much worse than expected" to "Much better than expected") | 3.85 (0.78) | N/A | N/A |

\* Significantly different from online at 0.05 level.
\*\* Significantly different from online at 0.01 level.
\*\*\* Significantly different from online at 0.001 level.

Table 3c
Correlations among key variables in the data sets

|  | Data set 1 | | Data set 2 | |
| --- | --- | --- | --- | --- |
|  | Online | Offline | Online | Offline |
| SESAT and OVSAT | 0.61 | 0.40 | 0.59 | 0.43 |
| SESAT and LOYAL | 0.22 | 0.08 | 0.19 | 0.11 |
| OVSAT and LOYAL | 0.52 | 0.46 | 0.48 | 0.42 |
| LOYAL and FREQUSE | 0.24 | 0.20 | 0.21 | 0.17 |

completely different. There are, however, a few notable differences in means between Data sets 1 and 2. For example, the frequency of use data suggests that the sample in Data set 2 consists of less frequent travelers. Although such differences in means between the two data sets are potentially interesting, our focus is primarily in exploring the relationship between customer satisfaction and loyalty, i.e., we focus on explaining why and how loyalty is higher online than offline and how it is related to customer satisfaction.

## 4. Models

To test our hypotheses, we develop three different sets of models.

- A simultaneous equation model in which satisfaction and loyalty are interrelated, such that each can be the driver of the other. This model is separate for online and offline samples and provides the base model for the next model, which we use to test the hypotheses.
- To formally test the effect of the online medium and the different hypotheses, we develop pooled models for the simultaneous equation and the recursive-system of equations, in which the medium is used as an additional (dummy) variable. This model is central to our analysis.
- A recursive system of three equations in which service encounter satisfaction influences overall satisfaction, which, in turn, influences loyalty. This model is separate for online and offline samples and forms the alternative model.

We describe each of these models below.

### 4.1. Simultaneous equation model of satisfaction and loyalty

According to our hypotheses, service encounter satisfaction, overall customer satisfaction and loyalty may be interrelated in that they drive one another. Such complex relationships can be captured by a simultaneous system of equations. We define the model for service encounter satisfaction as follows.[8]

$$
\begin{aligned}
SESAT_i = {} & \alpha_0 + \alpha_1 LOYAL_i + \alpha_2 RATREP_i \\
& + \alpha_3 RATROOM_i + \alpha_4 RATSERV_i \\
& + \alpha_5 RATPRICE_i + \alpha_6 RATLOC_i \\
& + \alpha_7 RATEASE_i + \alpha_8 FREQUSE_i \\
& + \alpha_9 PREXP_i + \alpha_{10} CONST_i + \alpha_{11} INTM_i \\
& + \alpha_{12} PACK_i + \alpha_{13} D_i * INTERACT_i \\
& + \alpha_{14} D_i * DEPTH_i + \varepsilon_i
\end{aligned} \tag{1}
$$

where $i$ is customer, SESAT is service encounter satisfaction, LOYAL is the loyalty to the service provider, RATREP is the customer rating on hotel reputation, RATROOM is the rating on room amenities, RATSERV is the rating on customer service, RATPRICE is the rating on price paid, RATLOC is the rating on location, RATEASE is the rating on ease of making a reservation, FREQUSE is the frequency of staying at hotels, PREXP is the rating on prior experience with the hotel, CONST is a dummy variable denoting whether traveler $i$'s hotel choice was driven by organizational constraints (1 if the choice was constrained, 0 otherwise), INTM is a dummy variable denoting if the traveler went through a travel website or a travel agent or intermediary before coming to the site of the hotel (1 if travel intermediary was involved, 0 otherwise), PACK is a dummy variable

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[8] One factor often used in understanding price sensitivity in the travel industry is the purpose of travel, business, or leisure. However, there are no strong theoretical reasons why purpose of travel might influence customer satisfaction or loyalty. Even so, a subsequent empirical analysis that included the purpose of travel did not show it to be a significant factor influencing customer satisfaction or loyalty.

indicating whether the hotel choice was part of a travel package (1 if the choice was part of a travel package, 0 otherwise), INTERACT is the perceived interactivity of the website, DEPTH is the perceived depth of information on the website, $D$ is a dummy variable =1 if the sample is online and =0 if the sample is offline, and $\varepsilon$ is an error term assumed to be normally distributed with a mean of zero. This model captures the fact that satisfaction in a particular encounter may be driven by loyalty to the service provider.

Next, we propose the following model of overall satisfaction.

$$
\begin{aligned}
OVRSAT_i = {} & \beta_0 + \beta_1 SESAT_i + \beta_2 LOYAL_i \\
& + \beta_3 EASINFO_i + \beta_4 FREQUSE_i \\
& + \beta_5 PREXP_i + \beta_6 TIMEDIFF_i + \xi_i
\end{aligned}
\tag{2}
$$

where OVRSAT is the overall satisfaction with the service provider, EASINFO is the general or overall ease of obtaining information on the alternatives, TIMEDIFF is the disconfirmation of search time in choosing the service (i.e., difference between the time generally spent in choosing a hotel and the time willing to spend in choosing a hotel), $\xi$ is an error term assumed to be normally distributed with a mean of zero, and the other terms are as defined earlier. In this model, both service encounter satisfaction and loyalty determine overall customer satisfaction.

Finally, we present the following model of customer loyalty.

$$
\begin{aligned}
LOYAL_i = {} & \lambda_0 + \lambda_1 OVRSAT_i + \lambda_2 EASINFO_i \\
& + \lambda_3 FREQUSE_i + \lambda_4 PREXP_i \\
& + \lambda_5 FPROG_i + \lambda_6 INCOME_i + \zeta_i
\end{aligned}
\tag{3}
$$

where FPROG is a dummy variable capturing whether traveler $i$ is a member of frequency program of the chosen hotel (1 if member, 0 otherwise), INCOME is the average annual income of the traveler, $\zeta$ is an error term assumed to be normally distributed with a mean of zero, and the other terms

are as defined earlier.[9] In this model, we allow overall satisfaction to influence loyalty.[10]

## 4.2. Pooled simultaneous equation models customer satisfaction and loyalty

To formally test the effect of the online medium on the relationships, we propose pooled models of service encounter satisfaction, overall satisfaction, and loyalty. We make the parameters $\alpha_k$, $k\varepsilon\{0, 1,\ldots12\}$ in Eq. (1), $\beta_l$, $l\varepsilon\{0, 1,\ldots.6\}$ in Eq. (2), and $\lambda_m$, $m\varepsilon\{0, 1,\ldots.6\}$ in Eq. (3) a function of the medium (online or offline) as follows. For $\phi_k\varepsilon\{\alpha_k, \beta_k, \lambda_k\}$

$$
\phi_k = \phi_k^F + \phi_k^N D_i
\tag{4}
$$

where $D_i$=1, when the data is for the online sample, and 0 otherwise.

Substituting Eq. (4) into each of Eqs. (1)–(3) produces the system of pooled models for our analysis.

## 4.3. Alternative model: recursive model of customer satisfaction and loyalty

To examine the incremental value of analyzing the relationship between customer satisfaction and loyalty as a system, we compared the results from the simultaneous equation system with those of an alternative model, i.e., a recursive model in which the LOYAL variable is absent in the equations for SESAT and OVRSAT. When these variables are absent, the model becomes recursive and the three equations in such a model can be estimated independently by OLS (Dhrymes, 1974).

---

[9] We do not include CONST, the variable indicating whether the hotel was chosen under organizational constraints, because it is a service encounter-specific variable and our dependent variable is overall loyalty. Even so, to test if this variable significantly drives loyalty, we estimated another model by including it. Its effect was insignificant, so we do not include it in our analysis.

[10] To test for a possible nonlinear effect of overall satisfaction on loyalty as suggested by Reicheld (1996), we tried to use an additional quadratic term in overall satisfaction. This term, however, is highly correlated with overall satisfaction in our data, precluding the testing of a possible nonlinear effect in our analysis.

### 4.4. Model estimation

We estimate the set of pooled model equations using the three-stage least squares (3SLS) method. We also estimate Eqs. (1)–(3) as a simultaneous system of equations for each sample, namely, the online sample and offline sample in Data set 1 and the online sample, unmatched offline sample, and matched offline sample in Data set 2.

We tested all models for heteroscedasticity using the Glesjer (1969) test. The tests did not indicate the presence of heteroscedasticity in any of the models. Also, because the same respondent chose both online and offline in Data set 1, there is a possibility that his/her responses are correlated across the media. To account for this possibility, we allowed for errors from the online and offline samples to be correlated in the estimation. Before pooling, we tested for homogeneity of slopes and intercepts using the Chow (1960) test. The null hypothesis of homogeneity of parameters was rejected ($p<0.001$).

## 5. Results and discussion

The results are summarized in Tables 4–6. The system of equations has good fit for cross-sectional data as indicated by the system-wide $R^2$ of 0.39 and 0.50 in the two data sets. The cross-residual correlations across the three equations are reasonably high (ranging from 0.43 to 0.73), indicating the appropriateness of the use of a simultaneous equation model for both data sets. The relative importance of a variable is indicated by its beta weight in each model. The results of the simultaneous system of equations separately for the online and offline samples for both data sets are consistent, overall, with those of the pooled simultaneous system of equations.[11]

### 5.1. Drivers of service encounter satisfaction and overall satisfaction

In both the data sets, service encounter satisfaction is not statistically different online versus offline. In Data set 1, however, overall satisfaction is higher

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[11] These results are not presented due to space limitations. They can be obtained by writing to the first author.

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Table 4
Results of the pooled model of service encounter satisfaction for online and offline customers

| Variable (parameter) | Data set 1 | | Data set 2 | |
|---|---|---|---|---|
| | Pooled model: (S.E.) | Beta weight | Pooled model: matched (S.E.) | Beta weight |
| Intercept ($\alpha_0^F$) | 1.34 (0.42)*** | | 1.50 (0.61)*** | |
| *Focal variables* | | | | |
| Online medium ($\alpha_0^N$) | NS | | NS | |
| Loyalty— incremental online ($\alpha_1^N$) | NS | | NS | |
| *Control and other variables* | | | | |
| Reputation ($\alpha_2^F$) | 0.09 (0.03)** | 0.12 | 0.13 (0.08)* | 0.13 |
| Room amenities ($\alpha_3^F$) | 0.21 (0.07)*** | 0.20 | 0.20 (0.07)*** | 0.21 |
| Service ($\alpha_4^F$) | 0.23 (0.12)* | 0.25 | 0.25 (0.06)*** | 0.29 |
| Location ($\alpha_6^F$) | 0.03 (0.01)** | 0.02 | NS | |
| Depth of information at the website ($\alpha_{14}$) | 0.15 (0.05)*** | 0.26 | 0.13 (0.06)** | 0.31 |
| Sample size | 144 | | 462 | |
| System wide $R$ squared | 0.39 | | 0.50 | |
| System wide RMSE | 0.53 | | 1.32 | |

NS—not significant.

For expositional clarity, the control and other variables associated with nonsignificant results and the beta weights of nonsignificant variables are not shown.

  * $p \leq 0.10$.
  ** $p \leq 0.05$.
  *** $p \leq 0.01$.

---

when a hotel is chosen online than when selected offline ($p<0.05$).

### 5.1.1. Direct effect of the online medium

After controlling for the effects of the service attributes, prior experience, frequency of service use, organizational constraints, and package choice, the online medium has no significant main effect on service encounter satisfaction in either data set. The online medium has no significant main effect on

Table 5
Results of the pooled model of *overall customer satisfaction* for online and offline customers

| Variable (parameter) | Data set 1 | | Data set 2 | |
|---|---|---|---|---|
| | Pooled model: (S.E.) | Beta weight | Pooled model: (S.E.) | Beta weight |
| Intercept ($\beta_0^F$) | − 0.90 (0.53)* | | 0.09 (0.62) | |
| *Focal variables* | | | | |
| Online medium ($\beta_0^N$) | NS | | NS | |
| Loyalty— incremental online ($\beta_2^N$) | 0.31 (0.13)** | 0.39 | 0.26 (0.13)** | 0.67 |
| Ease of obtaining information— incremental online ($\beta_3^N$) | 0.05 (0.02)*** | 0.19 | NS | |
| Frequency of use—incremental online ($\beta_4^N$) | 0.15 (0.08)* | 0.12 | 0.13 (0.07)* | 0.25 |
| *Control and other variables* | | | | |
| Service encounter satisfaction ($\beta_1^F$) | 0.50 (0.21)** | 0.35 | 0.64 (0.13)*** | 0.47 |
| Loyalty ($\beta_2^F$) | 0.61 (0.33)* | 0.29 | 0.73 (0.17)*** | 0.95 |
| Frequency of use ($\beta_4^F$) | −0.25 (0.09)** | 0.15 | −0.21 (0.07)*** | 0.33 |
| Prior experience ($\beta_5^F$) | NS | | − 0.11 (0.07)* | 0.10 |
| Prior experience— incremental online ($\beta_5^N$) | NS | | 0.17 (0.09)* | 0.30 |
| Sample size | 144 | | 462 | |
| System wide R squared | 0.39 | | 0.50 | |
| System wide RMSE | 0.53 | | 1.32 | |

NS—not significant.
For expositional clarity, the control and other variables associated with nonsignificant results and the beta weights of nonsignificant variables are not shown.

    * $p \leq 0.10$.
    ** $p \leq 0.05$.
    *** $p \leq 0.01$.

overall satisfaction either ($p < 0.10$). Thus, hypotheses $H_{1a}$ and $H_{1b}$ are not supported. Although the results do not support our hypotheses, they are consistent with what we should expect given the data—the mean levels of service encounter satisfaction are not different across the online and offline samples. The result regarding overall satisfaction is not sur-

prising either in Data set 2 given that the mean values of service encounter satisfaction in the various samples are not statistically different. With respect to Data set 1, although the mean value of overall customer satisfaction in the online sample is significantly higher than it is in the offline sample, the analysis shows that this difference is not due per se to the medium. Rather it is primarily due to the other factors we included in the model. Note that this data involves multiple service providers and websites,

Table 6
Results of the pooled model of *loyalty* for online and offline customers

| Variable (parameter) | Data set 1 | | Data set 2 | |
|---|---|---|---|---|
| | Pooled model: (S.E.) | Beta weight | Pooled model: (S.E.) | Beta weight |
| Intercept ($\lambda_0^F$) | 1.07 (0.36)*** | | 0.79 (0.93) | |
| *Focal variables* | | | | |
| Online medium ($\lambda_0^N$) | 0.43 (0.17)** | 0.54 | 0.41 (0.22)* | 0.35 |
| Overall satisfaction— incremental online ($\lambda_1^N$) | 0.32 (0.09)** | 0.11 | 0.50 (0.20)** | 0.33 |
| Ease of obtaining information— incremental online ($\lambda_2^N$) | 0.10 (0.04)* | 0.36 | 0.54 (0.20)** | 0.69 |
| *Control and other variables* | | | | |
| Overall satisfaction— offline ($\lambda_1^F$) | 0.33 (0.13)** | 0.38 | 0.43 (0.19)*** | 0.33 |
| Ease of obtaining information— offline ($\lambda_2^F$) | NS | | 0.28 (0.14)* | 0.12 |
| Frequency of use—offline ($\lambda_3^F$) | 0.24 (0.13)* | 0.22 | 0.33 (0.06)*** | 0.30 |
| Prior experience— offline ($\lambda_4^F$) | 0.09 (0.05)** | 0.04 | NS | |
| Sample size | 144 | | 462 | |
| System wide R squared | 0.39 | | 0.50 | |
| System wide RMSE | 0.53 | | 1.32 | |

NS—not significant.
For expositional clarity, the control and other variables associated with nonsignificant results and the beta weights of nonsignificant variables are not shown.

    * $p \leq 0.10$.
    ** $p \leq 0.05$.
    *** $p \leq 0.01$.

which may introduce idiosyncratic concerns regarding security, privacy, technology failure, and the like. These effects may have offset the favorable effects of the online medium on satisfaction, leading to a finding of no differences between online and offline customer satisfaction. As we indicated earlier, the actual main effects of the online medium can only be determined empirically.

### 5.1.2. Loyalty

Loyalty is significantly higher online than offline ($p<0.05$) in both data sets. Loyalty has no significant effect on service encounter satisfaction in both the data sets ($p<0.10$), therefore, $H_{2a}$ is not supported. A specific service encounter may be treated as transactional, not relationship-oriented, so that both loyal and nonloyal customers may have similar reactions to similar service levels during a single service encounter. However, the positive impact of loyalty on overall customer satisfaction is incrementally higher in the online sample in both Data sets 1 and 2 ($\beta_2^N$= 0.31, $p<0.05$ in Data set 1; $\beta_2^N$=0.26, $p<0.05$ in Data set 2), supporting $H_{2b}$. This is an important result from our study. It suggests that attitudinal loyalty to the service provider is also a major factor in creating enduring satisfaction across service encounters, particularly in the online environment.[12] Our result is consistent with Oliver (1999) who suggests that loyalty fortifies satisfaction toward the service provider, and other studies that have found loyal customers to have a lower decay rate of overall satisfaction, and to be more forgiving of less satisfactory services (Rust et al., 1999; Zeithaml, Berry, & Parasuraman, 1993). Our results also help explain the findings by Bain and Company which shows that the returns to loyalty-building initiatives are in the double-digits (Baveja, Rastogi, Zook, Hancock, & Chu, 2000), and lend further support to the results reported by Rust et al. (2000) who show that under certain conditions, it may be better to focus directly on loyalty-building initiatives (e.g., frequent-user programs), rather than work on satisfaction-enhancing efforts (e.g., total quality management).

### 5.1.3. Ease of obtaining information

The ease of obtaining information is higher online than offline in Data set 1 ($p<0.001$), as expected, but there is no difference in Data set 2. The effects of ease of obtaining information are consistent—the easier it is to obtain information the higher the overall satisfaction, consistent with the results of Oliva et al. (1992). Ease of obtaining information has a greater positive impact on overall customer satisfaction when the service is chosen online than offline ($\beta_5^N$=0.05, $p<0.01$ in Data set 1), supporting $H_3$. This is consistent with Johnson and Payne (1985) in that the online medium has lower cognitive costs than the offline medium, leading to greater customer utility and satisfaction.

### 5.1.4. Frequency of use

Frequency of use is not significantly different between online and offline shoppers in Data set 1 but is higher online than offline in Data set 2 ($p<0.05$). Frequency of use is negatively related to overall satisfaction in both data sets. These results support prior findings (Bolton & Lemon, 1999; Vredenburg & Wee, 1986). More frequent users have higher expectations. Thus, they are less likely to be satisfied than infrequent users.[13] The online medium, however, seems to mitigate this negative relationship—its incremental effects are positive in both data sets ($\beta_4^N$=0.15, $p<0.05$ in Data set 1; $\beta_4^N$=0.13, $p<0.05$ in Data set 2), consistent with $H_4$.

### 5.2. Drivers of loyalty

### 5.2.1. Direct effect of the online medium

Loyalty is significantly higher online than offline ($p<0.05$) in both data sets. A key result of our analysis is that the online medium has a positive impact on loyalty of the types of people in our two data sets, even after accounting for other factors that influence loyalty ($\lambda_0^N$=0.43; $p<0.05$ in Data set 1 and $\lambda_0^N$=0.41; $p<0.10$ in Data set 2), supporting $H_5$. In Data set 2, in particular, there are almost no differences between the online and offline samples on product attributes (this

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[12] Although our data do not allow us to make precise determination of the direction of causality, the simultaneous equation approach reduces the possibility that this is simply a correlation between loyalty and overall satisfaction.

[13] Respondents in Data set 1 had higher average frequency of use and lower satisfaction levels (on service encounter satisfaction and overall satisfaction) than respondents in Data set 2 (Tables 3a and 3b).

is expected given that both samples booked the same hotel, namely, Marriott) and yet, there is an incremental effect of the online medium on loyalty. Perhaps the online medium increases loyalty by making it easier for satisfied customers to choose the same hotel again (e.g., through bookmarks).

### 5.2.2. Overall satisfaction

Overall satisfaction enhances loyalty in both the samples in Data sets 1 and 2 ($\lambda_1^F$=0.33, $p$<0.05 in Data set 1; $\lambda_1^F$=0.43, $p$<0.01 in Data set 2). This finding supports similar findings (e.g., Bolton, 1998; Rust & Zahorik, 1993) regarding the effects of satisfaction on behavioral loyalty (or customer retention) and extends those results to attitudinal loyalty. More interestingly, the positive relationship between satisfaction and loyalty is stronger online than offline in both data sets ($\lambda_1^N$= 0.32, $p$<0.05 in Data set 1; $\lambda_1^N$=0.50, $p$<0.05 in Data set 2), thereby supporting hypothesis $H_6$. Therefore, it appears that satisfied customers are better able to express their loyalty online than offline, perhaps through the use of bookmarks, search features, and hot links associated with the content presented at the website.

### 5.2.3. Ease of obtaining information

Ease of obtaining information has a greater positive impact on loyalty when the service is chosen online than offline ($\beta_2^N$=0.10, $p$<0.05 in Data set 1; $\beta_2^N$=0.54, $p$<0.01 in Data set 2), supporting $H_7$. This is consistent with Oliver (1999) who suggests that ease of information search and retrieval generally increases the customer's likelihood of returning to the same service. The greater impact online relative to offline may be due to the learning that occurs when information search is easier, resulting in greater cognitive lock-in to the service provider in the online environment (Johnson et al., 2002). This result, together with the condition that search costs are typically lower online than offline, suggests that website content and the ability to access them at the time of decision-making favorably impact loyalty online.

### 5.3. Effects of other variables, including control variables

Among the control variables, customer perceptions of the attributes of the service encounter such as reputation, room amenities, customer service, and ease of reservations are not statistically different online versus offline. Customers perceived that they got a more favorable price online than offline (Data set 1), their location choices were better offline than online (Data set 1), that it was easier to make reservations online than offline (Data set 2), and that those who had made the hotel choices online had better prior experience with the service provider (Data set 1) and were willing to spend more time online than offline when choosing hotels (both data sets). The actual time spent choosing a hotel online was significantly higher at 2.97 versus 2.19 offline ($p$< 0.001) on a 6-point scale, where 1 was anchored at less than 5 min and 6 was anchored at more than 60 min (this data is not included in Tables 3a–3c because we do not use this variable in our models). This result was also replicated in Data set 2 (2.71 online versus 1.84 offline; $p$<0.01). Depth of information at the website has a positive impact on service encounter satisfaction ($p$<0.05), but interactivity of the website is not significant in either data set. Apparently, content is more important than interactivity in influencing customer satisfaction when customers make choices online, a finding consistent with what several Web gurus proclaim: "Ultimately, users visit your website for its content. Everything else is just the backdrop. The design is there to allow people access to the content." (Nielsen, 2000). Also, at the time of this study, major hotel websites did not have rich interactivity features, such as personalization. Perhaps with increasing personalization features, website interactivity could have a stronger influence on service encounter satisfaction.

As expected, the service attributes have significant effects in the expected direction on service encounter satisfaction (Table 4). The fact that location has little or no influence on service encounter satisfaction in Data set 2 suggests that even if location is the most important attribute influencing a customer's choice of a hotel, it does not determine satisfaction with the service provider. Several control variables (e.g., prior experience) have a statistically significant effect on overall satisfaction and loyalty, consistent with Bolton and Lemon (1999), Oliva et al. (1992), and Woodruff et al. (1983). Generally, these variables have a slightly larger impact on overall satisfaction and loyalty in Data set 2 than in Data set 1.

In Data set 2, because most online respondents (89%) and all offline respondents were frequent program members, we dropped this variable in the final model for overall satisfaction. To ensure consistency, we also dropped this variable for Data set 1, but this variable was not significant at the 0.01 level in the loyalty equation for Data set 1 even when we included it in the model.

As expected, service encounter satisfaction significantly enhances overall satisfaction both online and offline in both data sets ($\beta_1^F = 0.50$, $p < 0.05$ in Data set 1; $\beta_1^F = 0.64$, $p < 0.01$ in Data set 2). This finding is consistent with the belief that overall satisfaction is driven by satisfaction with a series of service encounters (Bitner & Hubbert, 1994; Oliver, 1997; Rust & Oliver, 1994).

## 5.4. Alternative model

To assess the incremental value of the simultaneous equation models, we compared the results from these models with those from the recursive models.[14] The comparison highlighted the appropriateness and importance of considering loyalty as a driver of customer satisfaction. The model fits and the interpretability of parameter signs were better for the simultaneous equation model than for the recursive model ($R^2$ ranging from 0.28 to 0.42 and five significant parameters with the wrong signs for the recursive model). Further, loyalty was a significant driver of overall customer satisfaction in the simultaneous equation model ($p < 0.05$), whereas loyalty had no effect on satisfaction in the recursive model. Recall that unlike the recursive model, the simultaneous system includes the impact of loyalty on both service encounter satisfaction and overall satisfaction, thus allowing us to explore the impact of loyalty on satisfaction.

## 5.5. Summary of results and study contributions

Table 7 summarizes the actual parameter signs obtained from our analyses along with the hypothesized parameter signs. Contrary to our expectations

Table 7
Hypotheses results

| Variable | Parameter | Actual sign | | Predicted sign |
|---|---|---|---|---|
| | | Data set 1 | Data set 2 | |
| Online medium on service encounter satisfaction ($H_{1a}$) | $\alpha_0^N$ | NS | NS | + |
| Online medium on overall customer satisfaction ($H_{1b}$) | $\beta_0^N$ | NS | NS | + |
| Loyalty on service encounter satisfaction— incremental online ($H_{2a}$) | $\alpha_1^N$ | NS | NS | + |
| Loyalty on overall satisfaction—incremental online ($H_{2b}$) | $\beta_2^N$ | + | + | + |
| Ease of obtaining information on customer satisfaction—incremental online ($H_3$) | $\beta_3^N$ | + | NS | + |
| Frequency of use on customer satisfaction— incremental online ($H_4$) | $\beta_4^N$ | + | + | + |
| Online medium on loyalty ($H_5$) | $\lambda_0^N$ | + | + | + |
| Overall satisfaction on loyalty—incremental online ($H_6$) | $\lambda_1^N$ | + | + | + |
| Ease of obtaining information on loyalty—incremental online ($H_7$) | $\lambda_2^N$ | + | + | + |

NS—not significant.

($H_{1a}$ and $H_{1b}$), the online medium does not have a significant effect on either service encounter satisfaction or overall satisfaction. The positive effect of loyalty on overall satisfaction is higher online than offline ($H_{2b}$). Ease of obtaining information has a stronger positive effect on overall satisfaction online than offline ($H_3$). Frequency of use has a lesser negative effect on overall satisfaction online than offline ($H_4$). Loyalty to the service provider is inherently higher if customers choose services online ($H_5$). We think that the most interesting results from our study are that loyalty has a stronger positive reciprocal impact on overall satisfaction when customers make choices online and that overall satisfaction had stronger positive impact on loyalty online than offline ($H_6$). Finally, ease of obtaining information has a stronger positive effect on loyalty online than offline ($H_7$).

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[14] The results of the recursive models are not presented to conserve space. They are available from the first author.

Taken together, these results offer the following answers to the questions that motivated our research. We had hypothesized that the shopping medium (online or offline) should affect both the efficiency (effort, cost) and effectiveness (the actual hotel chosen) of shopping, and therefore, we should expect satisfaction with a service to be different when chosen online versus offline. Surprisingly, our results did not support this view, at least for the types of services that we studied. This suggests that people care more about the actual service received, which apparently is no different whether the service is chosen online or offline, i.e., customers make satisfaction-equivalent choices, on average, regardless of whether they chose the service provider (hotel) online or offline.

At the same time, customers exhibit greater loyalty when they choose a hotel online, and the relationship between overall satisfaction and loyalty is also higher when the service is chosen online. This suggests that either loyal customers shop online, or customers are better able to express their loyalty online. The first explanation is unlikely given that we find loyalty to be higher online even in Data set 1, and also because loyalty is not highly correlated with frequency of stay. There is also a stronger reinforcing relationship between loyalty and overall satisfaction in the online environment. Together, overall satisfaction has a stronger effect on loyalty online, and in turn, loyalty has a stronger effect on overall satisfaction. Finally, the online medium offers more information and makes it easy for customers to access and use that information, which also fosters loyalty to the service provider.

Our results have extended prior research in two important ways. First, to our knowledge, this is the first study to compare satisfaction and loyalty across online and offline environments. Although there are substantial similarities online and offline among the determinants of satisfaction and loyalty and their relationship (e.g., the effects of service attributes, the determinants of service encounter satisfaction), the study has identified some incremental effects (e.g., effects of the ease of obtaining information) and some unique effects (e.g., depth of information at a website) of the online medium. Second, our study has uncovered a more complex relationship between satisfaction and loyalty—these two variables have a reciprocal relationship between them, an issue that has not been explored in previous research.

# 6. Managerial implications, limitations, and extensions

## 6.1. Managerial implications

Based on our study, we recommend the following strategies and tactics for service providers.

### 6.1.1. Use the online medium to reinforce loyalty

Satisfaction builds loyalty, which reinforces satisfaction, a phenomenon which is stronger online than offline. Service marketers should consider developing special loyalty-enhancing initiatives for their online customers to reinforce overall satisfaction.[15] For example, a hotel offering rewards based on number of hotel stays could (1) provide additional reward points for booking online, (2) prominently feature these rewards at its website, (3) enable customers to keep track of their reward positions, and (4) proactively remind or encourage customers to act when they get close to their reward milestones. While some companies have implemented the first three initiatives, not many are doing the fourth initiative.

### 6.1.2. Enhance the information content of the website

Our results show that the depth of information at the website increases service encounter satisfaction, which increases overall satisfaction, which, in turn, has a mutually reinforcing relationship with loyalty. Hotel marketers can enhance the depth of information at their websites by including such content as local weather, nearby attractions and restaurants, maps, events that will be taking place in a locality in the near future, a detailed list of amenities, pictures of rooms, etc. Yet another promising way to enhance content is for the service provider to partner with other service providers in related markets (e.g., a nearby car rental agency or nearby restaurants).

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[15] Although we have tried to get equivalent groups of online and offline customers in Data set 2, the population of online users could be systematically different from the population of offline consumers, so our results apply mainly to the sampling frames used in the study. Our results do not imply, for example, that service providers seeking to improve customer loyalty would necessarily benefit from a forceful conversion of offline customers to the online medium. In fact, forceful conversion of those customers who prefer to transact offline may likely diminish their loyalty.

### 6.1.3. Make information access as easy as possible on the website

The finding that ease of obtaining information has a stronger effect on both overall satisfaction and loyalty online than offline has important implications. First, a service provider should determine the appropriate information needs of its customers. Second, it should design a website so that the customer can access not only all the relevant information but also access them only when he/she needs it. Third, the company should invest in technologies that search for the right information and retrieve the information as quickly as possible. Fourth, the company may want to focus on creating the right user-interfaces that allow customers to access information in the way that is most convenient for them (e.g., on wireless device, without visuals, etc.).

### 6.1.4. Provide greater value to frequent online users

More frequent users seem to have greater overall satisfaction when they choose the service provider online than offline. This finding implies that companies should focus on increasing the frequency of use by online customers. These could be provided in the form of online promotions and incentives that offer more hotel stays or free hotel stays for increased use of the service.

### 6.2. Limitations and extensions

Our research has some limitations that should be addressed by future research. First, a major limitation is that we could not use multiple-item measures for most of our constructs due to data collection restrictions imposed by the study sponsors. It might be useful to replicate our study, perhaps in other service industries, using multi-item measures. Second, to enhance the generalizability of the findings, the study should be extended to other industries with a different set of contextual and competitive characteristics. For example, it would be interesting to study industries in which the entire service encounter including delivery is either online or offline (e.g., financial services). Third, it would be useful to explore whether loyalty to service provider extends to brand loyalty, an issue that would be particularly relevant for service providers with multiple brands. Fourth, an analysis of the impact of the medium on switching behavior would be a worthwhile complement to the analysis of loyalty and

customer satisfaction. This analysis is typically done using longitudinal data. Finally, future research should explicate the customer decision processes by which alternative forms of loyalty, especially ultimate loyalty (Oliver, 1999), are formed and maintained both online and offline.

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