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The impact of IT-enabled customer service systems on service personalization, customer service perceptions, and hotel performance

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H I G H L I G H T S

- Service personalization critical in allowing a hotel to differentiate its service.
- Information system enhances the efficiency of the service personalization process.
- The signifiers improve preference solicitation in hotel personalization services.
- Service personalization enhances hotel guests' evaluation on service and value.
- IT-enabled service systems change the dynamic of guest relationship with the hotel.

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A B S T R A C T

Customer service is a critical element of a hotel's strategy and an important lever for differentiation of the hotel's offer. Over the last two decades, information systems have contributed to the transformation of customer interactions, enabling an unprecedented scale and scope of service personalization in the tourism industry. This paper reports the results of a mixed method study in a hotel that offers three contributions to the development and refinement of IT-enabled service personalization theory. It explores the role of signifiers in the design of customer service systems, showing that they significantly increase customer preference elicitation during the learning phase of the service personalization process. It then demonstrates that improved preference elicitation translates into higher customer service evaluations and value perceptions of the hotel. Finally, our study shows that IT-enabled service personalization creates financial benefits for the hotel via revenue share-shift from costly intermediated to direct distribution channels.

1. Introduction

Information Systems (IS) have been transforming the service industry for over two decades (El Sawy and Bowles 1997; Karimi, Somers, & Gupta, 2001; Keen, 1991; Ostrom et al. 2010; Ray et al., 2005; Piccoli & Lui, 2014), and specially the hotel industry in the last 50 years (Law, Leung, Au, & Lee, 2013; Piccoli & Ott, 2014). The increasing embeddedness of Information Technology (IT) in business processes empowers organizations with the ability to provide high quality and personalized service at a reasonable cost (Buhalis & Law, 2008; Rust & Miu, 2006) so as to enhance the hotel's profitability (Melián-González and Bulchand-Gidumal, 2016).

In the service industry, IT-enabled Customer Service Systems (CSS) represent the collection of information systems that mediate and enable the performance of customer services with the objective of increasing overall customer value (Piccoli, Kathryn Brohman, Watson, & Parasuraman, 2004). The hotel industry is very competitive and customers are become increasingly sophisticated and discerning, demanding high level of quality and value (Niininen, Buhalis, & March, 2007). Personalization, the ability to tailor products, services, and the transactional environment to individual customers' needs, is a general process that occurs in many aspects of business (e.g., software customization) and social life (e.g., selecting the right gift for a sibling). A CSS empowers the firm to predict and identify customer needs (Chatzipanagiotou & Coritos, 2010; Shahin & Jamshidian, 2006) and to react to customers' requests promptly and effectively, thus allowing providers to personalize service delivery (Tan, Benbasat, & Cenfetelli, 2013).

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Given the strategic significance of service and personalization to the hospitality industry, and the widespread use of IT-enabled CSS, it is important to investigate the role of technology in service personalization (Ball, Coelho, & Vilares, 2006; Lui & Piccoli, 2016; Xu, Benbasat, & Cenfetelli, 2014). Many personalization studies have focused on customized information goods, such as recommendation systems (e.g., Parsons & Ralph, 2014; Ho & Bodoff, 2014; Lee, Jen-Hwa Hu, Cheng, & Hsieh, 2012; Zhang et al., 2011) or the information exchange environment and customized websites (e.g., Chan, 2014; Thongpapanl & Ashraf, 2011). However, there is surprisingly little empirical research to date that investigates the role of technology in service personalization (Xu et al. 2014). We contribute to filling the gap with a field study set in the context of the hospitality industry, in which services are complex and service personalization remains a strategic priority.

Our study focuses on the design of IT-enabled CSS in a hotel, its immediate impact on preference elicitation and its distal effect on customers and the hotel performance. Specifically, we leverage a unique dataset to make three contributions to theory and practice. We extend research on IT-enabled service personalization by exploring the role of signifiers in soliciting customer preferences in order to better understand customers' needs during the first stage of the personalization process. Second, we empirically demonstrate the value of IT-enabled service personalization, through its effect on customers' service and value perceptions of the hotel. Third we indicate its benefits because of its influence on the customer relationships with the hotel. This change in customer relationship produces benefits for the hotel via revenue share-shift – away from costly intermediated to inexpensive direct distribution channels.

2. Theoretical framework

2.1. Service personalization process

Service personalization is the process of using individuals' own information to tailor the service and the transactional environment to improve the benefits accruing to them (Shen and Dwayne Ball, 2012; Lee & Cranage, 2011). A process can generally be disaggregated into subprocesses – defined as the set of activities that accomplish a portion of an activity (Fahey, Srivastava, Sharon, & Smith, 2001). Aside from elementary activities (e.g., carrying a boarding pass to the gate), any process can be thought of as the subprocess of a larger one, or a superprocess of its phases. Service personalization includes two subprocesses: learning and matching (Murthi & Sarkar, 2003).

Any firm, not only hotels, needs a clear understanding of the customers' needs and preferences to provide personalized services (Gwinner, Jo Bitner, Brown, & Kumar, 2005). Learning is a data elicitation and gathering phase whereby an organization collects specific customer preferences through the interaction between the service provider and the service consumer (Glushko & Nomorosa, 2013). Learning occurs directly by asking individuals to explicitly express their likes and dislikes, indirectly by inferring preferences from actual behavior and previous interactions (Adomavicius & Tuzhilin, 2005), or through a combination of both means (Yu, Zhou, & Yang, 2004). Individuals generally hold well-differentiated values only for the most basic attitudes and frequently encountered experiences (Fischhoff, 1991). That is, customers' preferences are often ill-defined and are usually constructed on the spot in response to task demands (Bettman, Frances Luce, & Payne, 1998; Gretzel & Fesenmaier, 2005). Thus, in the service context, people generally do not have clear preferences unless they are facing familiar products or service options (Coupey, Irwin, & Payne, 1998). Rather, they formulate their attitudes and requests when they are asked to express them (Slovic, 1995). Direct learning is therefore most appropriate when customers have experienced the product/service before (e.g. a frequent flyer) and have had a chance to formulate salient preferences (e.g., a preference for aisle seating on a plane), or when preferences are easily formulated upon request (e.g., favorite soda) (Simonson, 2005). Indirect learning is necessary when preference must be observed and cannot be easily formulated or communicated (e.g., the degree of pressure during physical therapy). In practice a combination of the two approaches is typically adopted, with the direct method used to obtain general preferences and the indirect approach contributing to refining them (Huang & Lin, 2005).

The second subprocess in service personalization consists of matching customer preferences to specific offerings, or in customizing the offering to accommodate the learned preferences (Adomavicius & Tuzhilin, 2005). In the case of service personalization, matching consists of modifying certain components of the service offering, including service delivery, service products and service environments, based on personal profiles. The results of the delivery of the personalized service are monitored by the CSS and constitute feedback for better personalization in future service encounters (Glushko & Nomorosa, 2013). Examples include personalized TV program recommendations (Yu et al. 2004) and personalized websites that are organized around individual customers' needs (Fung, 2008; Piccoli et al. 2004).

A service personalization process is not necessarily IT-enabled. For example, a customer in a hair salon can read through the hair style magazines to select an example for the stylist to follow. In the context of service personalization, IT can be deployed in the learning and/or matching subprocesses, enabling respectively preference elicitation and personalization fulfillment. In the above hair styling example, an IT-enabled service personalization process would be possible through an app on a tablet. Using this IT-enabled customer service system, hair salon patrons could take their own picture with the hair salon's tablet and virtually try on different hairstyles. The IT-enabled process would provide a better representation of the expected outcome and provide the stylist with a customized example to follow.

2.2. CSS design and service personalization affordance

Understanding the interplay of people and technology requires theories that simultaneously capture features of technology as well as characteristics of individuals and their intentionality (Majchrzak and Markus, 2013). One theoretical approach, the affordance perspective (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007), considers both simultaneously. While information systems scholars have mostly applied it to the organizational context (Leonardi, 2011; Markus & Silver, 2008), ecological psychology first introduced the affordance perspective as a theory of *individual* perception. Specifically, an affordance represents “opportunities for action” as perceived by an organism in its environment (Gibson, 1977). The construct migrated to artifacts and technology design as a relational concept capturing the potential for action that emerges through the interaction of information technology and social agents (Norman, 1988). As a relational concept, an affordance is not a property of technology. Rather its existence is jointly determined “by the qualities of the object and the abilities of the agent that is interacting” with it (Norman, 2013, p. 11). Moreover, as a possibility for action, rather than the action itself, an affordance is conceptually separate from a given behavior and it is merely the necessary precondition for the behavior to occur. In other words, the same technology features will *afford* different behaviors to different people, or even to the same person at different times. In the specific context of information systems design, a functional affordance represents a “relationship between a technical object and a specified user (or user group) that identifies what the user may be able to do with the object, given the user's capabilities and goals" (Markus & Silver, 2008, p. 622). Thus, a functional affordance simultaneously stems from the *technology design features* of the system being utilized and the *goal-oriented behavior* of those using it. The concept of functional affordance allows us to focus attention only on the technology features that are "of material difference" (Leonardi, 2010) between competing designs. Thus limiting the range of technical features and technology properties that we need to examine (Markus & Silver, 2008) when evaluating the impact of systems and applications. It is critical to note that, as an action potential, for an affordance to exist it is not necessary that the entity "picks up information about the specific affordance" but rather that "the possibility exists for the affordance to be realized" (Bærentsen & Trettvik, 2002, p. 53). However, affordances are relevant to information systems design only insomuch as individual users perceive them in order to take advantage of the technology's functionalities (Norman, 1988). The property of a technology design that communicates, implicitly or explicitly, available behavior to a user is called a signifier (Norman, 2013). Signifiers are important to ensure that affordances don't remain latent, but are in fact recognized. As Norman puts it: "Good design requires, among other things, good communication of the purpose, structure and operation of the device to the people who use it. That is the role of the signifier." (Norman, 2013, p. 14).

Despite its limited adoption at the individual level in the information systems literature, the affordance perspective is well suited to aid our understanding of IT-enabled service personalization during the learning subprocess. When it is not trivially executed, service personalization is a complex endeavor which requires interaction among customers, firms and channels (Murthi & Sarkar, 2003). Preference uncertainty, the absence of well-defined and stable set of likes and dislikes, prompts customers to formulate preferences on the spot (Slovic, 1995) increasing the cognitive burden and difficulties in making choices (Broniarczyk and Griffin, 2014). Alternatively, individuals will defer their choice decisions when there is no clear alternative providing a decisive advantage (Dhar, 1997). That is, customers may not be aware of, or clear about, their own preferences for personalized service thus failing to make requests that would ultimately improve their experience. While a firm may stand ready to deliver a personalized experience, it faces service breakdowns and unrealized benefits because the learning phase of the service personalization process fails to elicit appropriate requests (Padmanabhan, Zheng, & Kimbrough, 2001). Decision aids, such as a taxonomy or framework that enables the identification of "the relation between a product's features and one's evaluation of the product" (West, Brown, & Hoch, 1996, p. 120), enhance customers' understanding of their own preference (West et al. 1996). For example, when asked about preferences for wine, a novice drinker will encounter difficulties in choosing. However, when presented with a set of descriptors of wine, such as "oaky," "fruity," and "buttery," the customer can make a better decision based on the matching of the personal taste to specific attributes of the wine. Even without a well-constructed set of preferences, the mere presence of categories of available options can enhance customers' satisfaction when facing choices (Mogilner, Rudnick, & Iyengar, 2008).

We argue that the design of the IT-enabled CSS can improve preference elicitation during the learning phase of the service personalization process by leveraging the representation capability of information technology (Overby, 2008). Technology can provide appropriate signifiers and ensure both awareness of options and a superior understanding of such personalization options. Specifically, while the learning phase of the service personalization is always designed to convey personalization affordance to customer, unless its design provides appropriate signifiers, the preference elicitation process fails and the benefits of service personalization are largely lost. Thus, the use of signifiers promotes awareness of personalization options, ensuring that customers perceive the functional affordance for personalization and, as a consequence, those who are interested in personalizing their experience are more likely to communicate their requests to the firm.

Hypothesis 1a. IT-enabled CSS that use signifiers in the learning subprocess of service personalization increase the extent of preference elicitation.

Hypothesis 1b. IT-enabled CSS that use signifiers in the learning subprocess of service personalization increase the number of customers expressing preferences.

2.3. *The service personalization process outcomes*

2.3.1. *Enhanced customers evaluation of service*

The design of an IT-enabled CSS that improves the learning phase of the service personalization process fosters greater understanding of customers' personal needs by the firm (Komiak & Benbasat, 2006). It enables individuals to more precisely specify their requests, given the set of possible customizations made available by the firm. Service quality theory predicts that individuals that better specify their service requirements experience a narrowing of the expectation-delivery gap (Parasuraman, Zeithaml, & Berry, 1985) with a subsequent improvement in perceived satisfaction (Ho and Zheng, 2004). Consequently, personalization has emerged as one of the principal factors influencing the perception of e-service quality (Yang, Peterson, & Cai, 2003). As discussed above, the learning subprocess embedded in an IT-enabled CSS facilitates the presentation and disambiguation of a large number of options, and it also allows for the univocal match of these options to the salient preferences of the customer with precise identification and control (Overby, 2008). In the context of IT-enabled CSS, personalization and individual attention have been linked to satisfaction with the shopping experience (Yang et al. 2003). As customers' perceive service quality to be the difference between their expectations for a service offering and their perceptions of the service received (Parasuraman et al. 1985), they will experience higher service quality when they can tailor more elements of the service experience to their expectations. Thus, we hypothesize that IT-enabled service personalization makes available the benefits of personalization to individuals who were unable to experience it before, thereby improving their assessment of the experience as compared to individuals who do not experience it. In other words, we are comparing the level of satisfaction of those individuals who, thanks to technology, are able to precisely tailor their experience versus those who don't because they either personalize through the traditional process without the aid of technology or do not personalize at all.

Hypothesis 2a. IT-enabled service personalization increases service ratings.

Economic benefits are rooted in the creation of customer value, defined as an individual's "overall assessment of the utility of a product based on perceptions of what is received and what is given" (Zeithaml, 1988, p. 14). Thus, perceptions of value form through comparison of the monetary and non-monetary costs of acquiring the product or service and the utility or enjoyment derived from its use (Woodruff, 1997). Previous research has shown that service personalization may affect either or both of the dimensions of customer value. For example, recommendation systems reduce information overload and effort during the personalization process (Liang, Lai, & Ku, 2006, 2012) while personalized service has been shown to improve enjoyment by creating unique or memorable customer experiences (Ball et al. 2006). In sum, service personalization enhances customers' perceived service quality and value (Coelho & Henseler, 2012).

The service personalization process enables access to personalized service through self-selection. If the direct learning method is adopted, individuals, however, must explicitly express their requests by exercising decisional control (Surprenant & Solomon, 1987). They must invest time and effort in providing their preferences before being able to reap the benefits of tailored service. As a result, the closer fit between customers' preference and product attributes provides greater benefit to customers (Franke, Keinz, & Steger, 2009). Thus, the enhanced customer value will be the difference between the incremental utility obtained through personalization and the added cost of providing their preferences. The incorporation of signifiers in the design of CSS allows for effective articulation of customers' preferences and reduces the cost side of the customer value equation.

Hypothesis 2b. IT-enabled service personalization increases value ratings.

2.3.2. Dynamic change on the relationships between customers and firms

Through IT-enabled customer service systems, an organization can develop an electronic relationship (O'Toole, 2003) with those individuals that adopt the IT-enabled service personalization process (Morgan-Thomas & Veloutsou, 2013). Relational benefits (Gwinner, Dwayne, & Bitner, 1998), the value (i.e., confidence benefits, social benefits, and special treatment benefits) created through the interpersonal interaction between customer and service providers, are the antecedents of customer satisfaction with the service (Hennig-Thurau, Gwinner, & Gremler, 2002; Yen & Gwinner, 2003). Service personalization increases perceived service quality, customer satisfaction, customer trust and ultimately customer loyalty toward the firm (Coelho & Henseler, 2012). Customers' perception of participation and firm's responsiveness when engaging in a personalized service process also can lead to a long-term relationship with the firm (Lee et al. 2012). Direct customer relationships have been shown to provide economic benefits through disintermediation (Buhalis & Law, 2008; Sheth & Sharma, 2005). In the case of the hotel industry, a direct reservation through the hotel's website results in a substantially higher profit margin than intermediated reservations due to the saving on the commission paid to a third party online travel agency. Recent work on website customization indicates that personalization induces affective attachment and customer commitment to stay with the website (Fung, 2008). It follows that IT-enabled service personalization should contribute to shifting transactions to the direct channel, irrespective of the channel of distribution that customers have historically utilized.

Hypothesis 3a. IT-enabled service personalization increases direct transaction.

Hypothesis 3b. IT-enabled service personalization decreases intermediated transaction.

3. Methodology

We adopt a sequential mixed method research design encompassing a qualitative case study and a field study in a hotel in order to document how an IT-enabled CSS was designed and used to enable the service personalization process and to test its consequences (Venkatesh, Brown, & Bala, 2013). We seek to provide a holistic view of the IT-enabled service personalization phenomenon. A mixed method approach is ideal in this case as it is designed to interject context into a research inquiry (Venkatesh et al. 2013). Specifically, through an in-depth case study coupled with quantitative testing of hypothesis 1, we evaluate the role of functional service personalization affordance in enabling successful service personalization. We demonstrate that the design of an IT-enabled customer service system fosters both service personalization increase by individual customers and personalization by more customers. Subsequently, we empirically test the effects of such increase in the service personalization for both customers and the hotel.

3.1. Context

The context of this study is an independent four-star hotel with 122 rooms (HtlCo). Business mix is roughly 40% leisure and 60% business, all transient travelers (no groups). Average occupancy during the study time frame was 87% and average room rate was 126.82 euro. The hotel is located near the city's main train station and competition in the area is fierce – 28 properties in a 500-m radius of the hotel. During the time of the study, online distribution channels (e.g., online travel agencies, proprietary website) were responsible for more than 82% of the hotel's reservations.

3.2. Case study

To analyze the IT design choices that enable service personalization we adopt a representative single-case design (Yin, 2002). In HtlCo we had the ability to study the customer service system that enables service personalization since its inception, with unconstrained access to data on the system design process as well as the outcomes of the redesigned approach to personalization.

We gathered data using multiple, complementary sources of evidence (Yin, 2002) throughout the design, implementation and operation of the hybrid service personalization process. Specifically, we collected documentation on the IT design and development process (i.e., architecture, implementation, roll-out); archival records on system use; in-depth semi-structured interviews with the CEO, Revenue Manager and CRM & Marketing Manager both before (August 2010) and after (April 2012) the roll-out; post roll-out in-depth interviews with the IT director, the system's architect, the developer, and seven operational staff from all the functional areas involved with the service personalization process (reservations, front desk, housekeeping, guest services, food & beverage). All interviews, ranging from 30 min to 2 h, were taped and follow up conversations occurred when needed for clarification. Finally, we engaged in direct observation by visiting the property on three separate occasions and examined the physical artifact (i.e., the application) from the standpoint of internal and external users. We operationalize a) preference elicitation as the number of personalization items that customers requested in the learning phase of the traditional service personalization process versus the IT-enabled process; b) the number of personalizing reservations as the number of instances where individuals engaged in the traditional personalization process before and after the implementation of the customer service system, as well as the number of reservations that have made personalization requests using the IT-enabled process once the system became available. To better contextualize our findings we also tracked the extent of customer service system adoption potential of the service personalization process. Specifically, we tracked the number of email confirmations sent, successfully delivered, opened, clicked, and the number of reservations that guests actually personalized. While the case study is confirmatory in nature, multiple sources of evidence allow for triangulation of the analysis during pattern-matching.

3.3. Field study

We obtained archival data on 98,330 reservations, spanning from January 2010 to December 2014. The dataset includes the guests' profiles, guests' reservation data, and guests' personalization activity beginning one year prior to the implementation of HtlCo's IT-enabled customer service system. These data were matched with service assessments and reservations originating from Booking.com. We collected ordinal evaluations on the dimensions of value, staff, services, cleanliness, comfort and location. From a design standpoint, Booking.com offers three advantages: a) the site is the dominant channel of distribution for the hotel (responsible for 30.14% of HtlCo total reservations during the time of the study); b) only guests who have actually stayed at the hotel can evaluate; c) for non-anonymous evaluations, the data can be merged with reservation and personalization data collected from the hotel. For the February 1st 2011 to December 31st, 2014 timespan (i.e., active customer service system enabling service personalization) the dataset includes 77,667 reservations, of which 4706 are linked to Booking.com reservations.

4. Data analysis and results

4.1. IT design enabling service personalization: case analysis

Every hotel provides some form of service personalization to their guests. The traditional approach of service personalization is similar for most lodging organizations and it describes well the traditional approach at HtlCo. Any time between making a reservation and checking-in at the front desk, a hotel guest can convey to the service provider any special request that will make their experience more pleasant. At the time of reservation, HtlCo prompts such requests with the statement: “Is there anything else I can do for you?” at the completion of the reservation process. Moreover, any interaction taking place with customers either prior to their arrival or during the stay reiterates the offer with the formula: “if you have any other questions or requests, please do not hesitate to contact us,” or “should you have any questions or requests, please dial 0 from your room.” In response, a guest with allergies will typically request hypoallergenic pillows, and one travelling with a baby may request a baby cot. Historically guests communicate these requests by contacting the hotel directly (e.g., call or fax) or through their travel agents. Upon receiving the request, hotel staff annotates them in a specific field of the Property Management System (PMS) database, referred to as traces, from where they can be appropriately routed. In the case of hypoallergenic pillows for example, the message will be distributed to the housekeeping department so the room attendants can prepare the bed accordingly. Note that traces are not exclusively used for personalization requests, but also for any type of internal communication between departments. We obtained all traces recorded from January 2010 to December 2014 (31,269 traces). Three raters then separated traces referring to service personalization requests from those not asking for personalization. Agreement percentage was 88.5% (Fleiss's Kappa = 0.727) (Landis and Koch, 1977).

In an effort to differentiate its offering and overcome the commoditization trend in the industry (Peterson, 2011), HtlCo sought to improve its service personalization process by enabling any reservation-holding guest to provide extensive customization requests by way of a personalized site called MyPage (Fig. 1).

Specifically, when HtlCo sent a confirmation email to a guest (HtlCo had emails for 87.20% of all reservations placed during the timeframe of our study), it added a TinyURL directing customers to their personal MyPage site. The site enabled viewing of current reservation(s) and management of future ones, booking

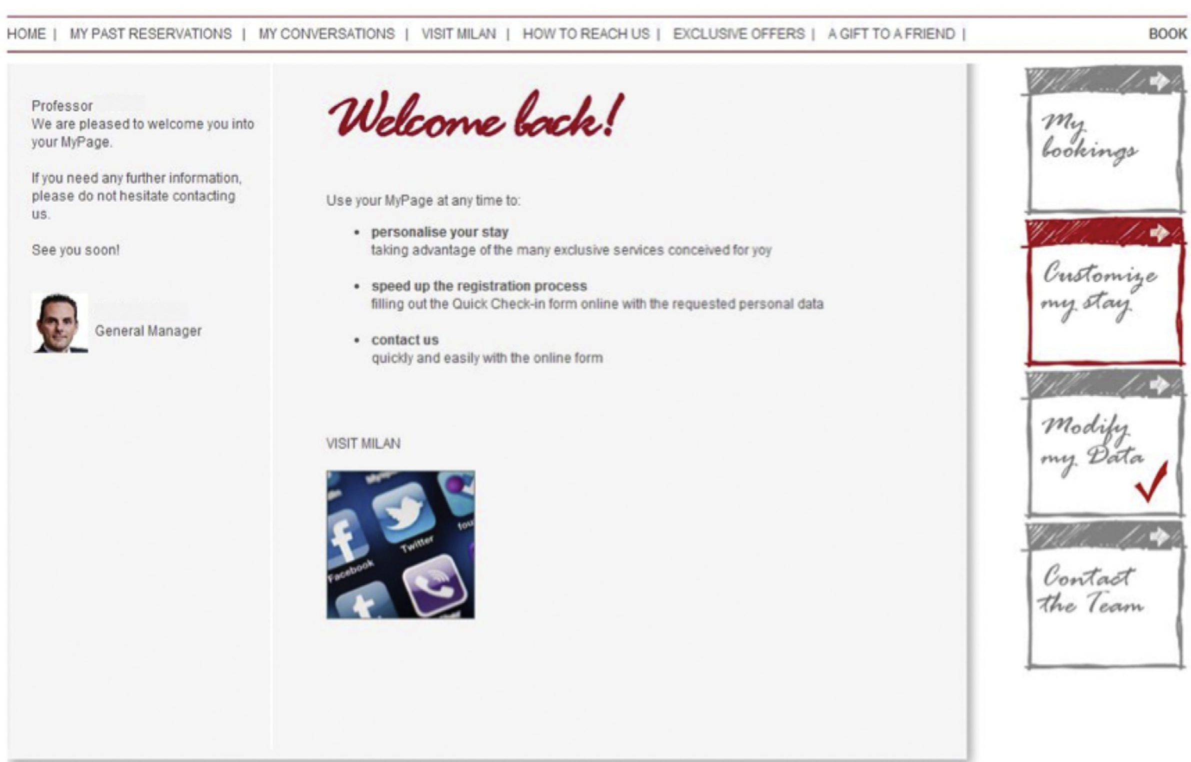

Fig. 1. Main page.

functionalities, and a messaging system to communicate directly with hotel guest relations. The defining feature of MyPage was service personalization. On their personal page customers could select amongst 57 options (of which 23 were free) ranging from preferred room temperature upon arrival to pillow types and bedding to mini-bar items. After being developed and tested at a sister property in a different city, the system went on-line at HtlCo on January 27th, 2011. The original vision behind the HtlCo personalization system was rooted in the belief that superior customer service was possible by using technology to shift time from unproductive activities to guest facing efforts:

We wanted to find a way to give a better service using a tool and philosophy to avoid the great waste of time in our daily activities, and use this “better” time to concentrate on the experience of the guest. So, time is important and time for the guest is the number one priority. [CEO].

This belief was reflected in the design of the system from its inception:

When I took the job [the GM] showed me this flow chart with the customer at the center and around all the hotel activities. But how do you communicate all these preferences and requests to staff involved? How much paper do we need to print? So my first job here was the ‘no print’ project, where we built the back-end to eliminate printing. [IT Director].

Embedding the learning subprocess of service personalization in the customer service system entails choosing between the direct and indirect learning approach. While both indirect and direct learning approaches to service personalization had been tested in the lodging industry (Applegate & Piccoli, 2002; Hemp, 2002), HtlCo gravitated very early toward a direct learning design since it mirrored naturally the standard process of preference elicitation.

In late 2007 I phoned [the software architect] and asked him how feasible it would be to create a personal web page for every customer to whom we send a confirmation so that the guest could tell us their room preferences. [CEO].

HtlCo's design leveraged the representation capability of IT to communicate the personalization options available. It enabled HtlCo to present available options unambiguously by providing a description of the items that can be requested along with an image (Fig. 2).

HtlCo had always prompted guests to personalize the service by making requests via email, fax or telephone, prior to their arrival. However, the redesigned learning subprocess on the MyPage site offered a menu of options, enabled real-time collection and storage of preferences, allowing the customer to check that they had been recorded. It is these features of the personalized page that serve as signifiers to ensure that customers perceive the service personalization affordance. Without those features, as in the traditional approach, guests may not be aware of the specific possibilities to customize their experience. Moreover, the signifiers operate as the “consumption vocabulary” (West et al. 1996) that facilitates precise preference elicitation by helping customers identify the services that would best improve their experience.

The preferences of the guests obtained during the learning subprocess were transmitted to service personnel on the date of the guests' arrival enabling the housekeeping department to customize

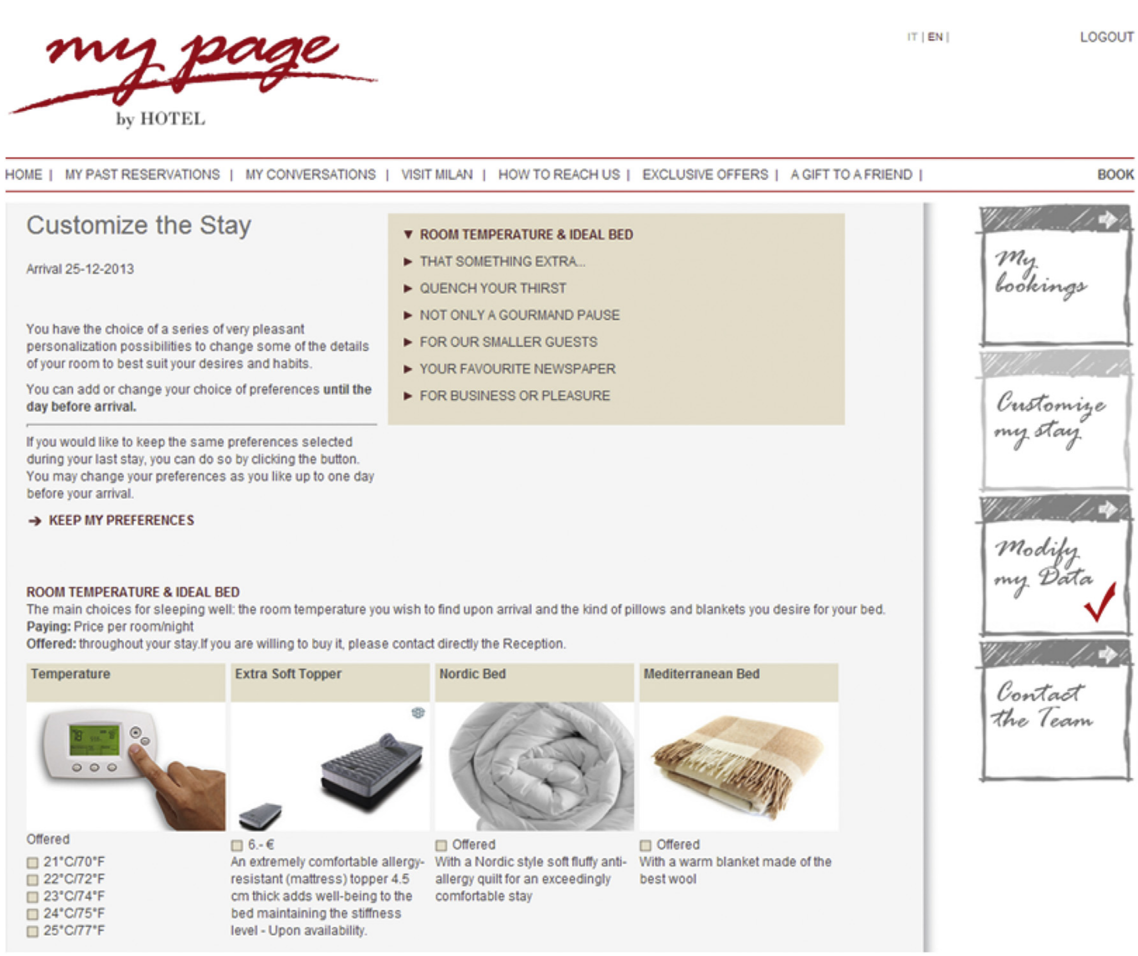

Fig. 2. Personalization functionality.

the guests' rooms according to their expressed preferences. Each housekeeper used an iPad during the shift to access the information about guests' requests. Therefore, during the matching subprocess different attributes of the guestroom could be prepared to fulfill guests' preferences before their arrival. Housekeepers and other personnel were unaware of the source of the preferences, whether via MyPage or through traditional media. Thus, the preference matching phase of the process was identical for all guests.

4.2. Results

Information systems theory states that for information systems where use is not mandated, failure occurs when the new system is shut down or not continuously employed by the intended users (Attaran, 2004; Kim & Malhotra, 2005). Thus, we anecdotally show support for the claim of successful implementation of the customer service system by tracking actual use percentage since the summer of 2012 when the HtlCo introduced an email marketing solution. Forty-seven months after its introduction the IT-enabled service personalization process was still operational and continually used by the intended audience. On average, 46.88% of reservations where the guest acted upon the receipt of the email by visiting the MyPage application resulted in service personalization (Table 1 provides the summary statistics). Fig. 3 shows the high number of personalization requests through MyPage, compared to the traditional channel.

Table 1
Summary statistics of personalization request via traditional channel and mypage.

	Mean	SD	Min.	Max
Total stays[a]	1638.83	239.42	808	2167
Stays with personalization requests (traditional channels) [a]	34.43	19.52	2	100
Stays with personalization requests (through MyPage) [a]	235.89	62.13	102	374
Items requested per stay (traditional channels)	1.06	0.27	1	4
Items requested per stay (through MyPage)	5.94	3.18	1	32

[a] Monthly data.

Strong support for hypotheses 1a and 1b provides a formal test corroborating these anecdotal results. Specifically, we test the first hypothesis with a subset of the data consisting of 13,153 reservations of guests who personalized their hotel stays (11,087 reservations requested personalization through MyPage and 2066 reservations through the traditional approach) over the five-year period (January 2010–December 2014) to investigate the preference elicitation between the traditional approach and MyPage. We model the expected number of items requested (μ_i) using a Poisson regression with log link:

$$\ln(\mu_i) = \beta_1 + \beta_2(MyPage_i),$$

i = 1, …, 13,153 (n = 13,153).where μ represents the expected number of items requested by a guest through either the IT-enabled customer service system or not. A value of 1 for the *MyPage* dummy variable indicates service personalization requested through MyPage and 0 refers to the traditional personalization process. Our results provide strong support for preference elicitation increase showing that, on average, guests request 1.06 items per stay when using the traditional personalization request process and that the average number of items increases by a factor of 5.60 when using the IT-enabled process. Specifically, the IT-enabled service personalization process generates, on average, 4.88 more personalization item requests per reservation than the traditional process.

We test the second hypothesis utilizing the entire dataset of 98,330 reservations over the same time frame (January 2010–December 2014). We estimate the proportion of guests engaging in service personalization with a binomial regression with logit link:

$$\mathrm{logit}(P(Personalization_{ij}=1)) = \ln\left[\frac{P(Personalization_{ij}=1)}{1-P(Personalization_{ij}=1)}\right] = \beta_1 + \beta_2(MyPage_j) + \beta_3(Implementation_i),$$

i = 1, …, 98,330 (n = 98,330),j = 1, 2.

Personalization is a dummy variable where *Personalization* with

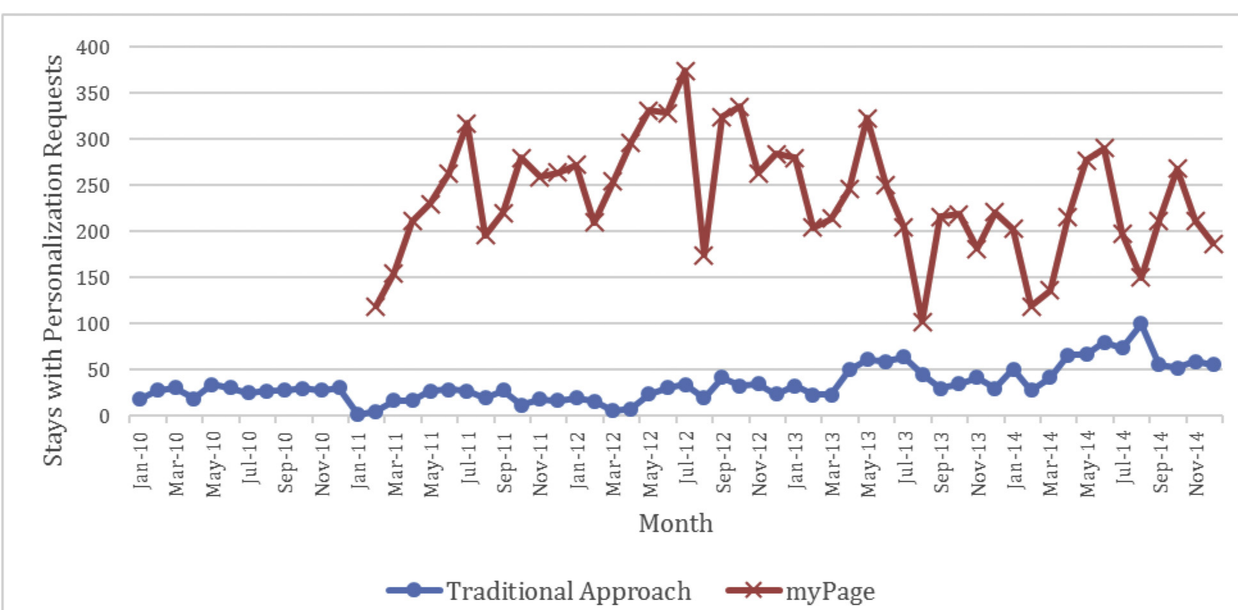

Fig. 3. Number of stays with personalization requests through MyPage and the traditional channel by month.

Table 2
Poisson and binomial regression results.

	Predictor	Coef.	Std. Error	z-value	p-value	Odds ratio
Preference elicitation	Constant	0.06	0.02	2.82	<0.01	
	MyPage	1.72	0.02	79.35	<0.01	
Number of customers engaging in preference elicitation	Constant	−4.11	0.06	−74.37	<0.01	0.02
	MyPage	1.99	0.03	75.35	<0.01	7.28
	Implementation	0.34	0.06	5.57	<0.01	1.40

subindex $j = 1$ indicates personalization via the IT-enabled process, while subindex $j = 2$ indicates personalization via the traditional process. *MyPage* is 1 for subindex $j = 1$ and 0 for subindex $j = 2$, while *Implementation* is coded as 1 for reservations occurring after the introduction of the IT-enabled service personalization process (February 2011) and 0 when the only available option was the traditional personalization process. We use this variable to measure any cannibalization of traditional service personalization stemming from the introduction of the IT-enabled service personalization process.

Our results provide strong support for preference elicitation increase (Table 2). Specifically, we find that the IT-enabled service personalization process generates an increase in personalization of almost one order of magnitude (respectively 13.93% and 2.14%). We also find that the introduction of the IT-enabled customer service system does not cannibalize the traditional personalization process, but rather it has an incremental effect (coefficient $= 0.34$, p-value < 0.01).

Note that our test of preference elicitation is conservative. Our analysis shows that HtlCo had email addresses for 87.20% of the customer base during the study timeframe, and, on average, 98.74% of emails with the link to the MyPage application are successfully delivered. Of these delivered emails only 75.29% are opened. Thus, our finding that 14.36% of total reservations are personalized via MyPage is conservatively based on the full customer base, including those individuals who had no opportunity to personalize at all. Computing the ratio based on the number of guests who received the invitation to personalize via email, or acted upon the receipt of an email to visit the MyPage application, the percentage grows to 24.47% and 46.88% respectively. Conversely, the full customer base, even those individuals who don't have or don't use email, have access to the traditional service personalization process – at least in theory. They are alerted at the time of reservation, regardless of the channel they use, to the possibility of calling the hotel to request any amenities that will make their stay more pleasant and they can call at any time to make a request.

We test hypotheses 2a and 2b with 4706 reviews posted to Booking.com merged with reservation data. The dataset includes personalization usage, customers' service and value ratings, as well as control variables. *Service* and *Value* are assessed on a four-point ordinal scale with anchors: "poor," "fair," "good," and "excellent." *MyPage* is a dummy variable, with 1 indicating personalization requested through MyPage and 0 indicating the lack of request of personalization via the customer service system. We included a number of control variables: average daily room rate (ADR) in EUR, room type, length of stay in days (LOS), price paid for personalized items in EUR (PPrice), number of adults and children for each reservation (see Table 3 for summary statistics).

Due to the ordinal nature of the dependent variables in hypotheses 2a and 2b we use the following two proportional odds regression models.

$$\begin{aligned}\text{logit}[P(Service_i \le j)] &= ln\left[\frac{P(Service_i \le j)}{P(Service_i > j)}\right]\\ &= \theta_j - \beta_1(MyPage_i) - \beta_2(ADR_i) - \beta_3(LOS_i)\\ &\quad - \beta_4(Quality_i) - \beta_5(Superior_i) - \beta_6(Basic_i)\\ &\quad - \beta_7(Adults_i) - \beta_8(Children_i) - \beta_{10}(PPrice_i)\end{aligned}$$

$$\begin{aligned}\text{logit}[P(Value_i \le j)] &= ln\left[\frac{P(Value_i \le j)}{P(Value_i > j)}\right]\\ &= \theta_j - \beta_1(MyPage_i) - \beta_2(ADR_i) - \beta_3(LOS_i)\\ &\quad - \beta_4(Quality_i) - \beta_5(Superior_i)\\ &\quad - \beta_6(Basic_i) - \beta_7(Adults_i) - \beta_8(Children_i)\\ &\quad - \beta_{10}(PPrice_i)\end{aligned}$$

$j = 1,\ldots,3$ index the service/value rating categories of poor, fair and good.$i = 1,\ldots,4706$ index all observations ($n = 4706$).

Room type is a categorical variable with values "Comfort", "Quality", "Superior" and "Basic". In the regression the category "Comfort" is used as a baseline and dummy variables are included for the other categories.

Our results indicate that engaging in IT-enabled service personalization increases ratings of service (Table 4) and value (Table 5) significantly. Specifically, the odds ratios for *MyPage* are 1.211 when measuring service and 1.198 when measuring value. Thus, for each rating level in the scale, customers who experience IT-enabled service personalization have a 21.1% (and 19.8%) higher chance than their counterparts to fall in a higher service (and value) rating category (e.g., excellent) than those below (e.g., good or lower).

Table 3
Summary statistics.

Categorical variables	Response categories				
	No response	Poor	Fair	Good	Excellent
Service	49	32	214	1586	2825
Value	50	80	373	1759	2444

Categorical variables	Response categories			
	Comfort	Quality	Superior	Basic
Room type	2130	865	481	1225

Categorical variables	Response categories	
	Non-IT-enabled personalization (0)	IT-enabled personalization (1)
MyPage	3454	1252

Numeric variables	Descriptive statistics			
	Mean	SD	Min.	Max
ADR	130.31	37.91	58.05	379
LOS (Length of Stay)	2.00	1.31	0	17
PPrice (Preference Price)[a]	14.95	14.59	1.50	68
Adults	1.72	0.58	0	3
Children	0.06	0.26	0	3

[a] Computed over the 149 stays that requested at least one paid personalization item (3.17% of total stays and 11.90% of stays with personalization).

We tested hypotheses 3a and 3b using the sample of 7265 guests who visited the hotel more than once during the timeframe of our study (February 2011 to December 2014). 1164 guests engaged in IT-enabled service personalization on their first visit. We theorized that these individuals would be more likely to transact directly with the hotel in the future, with consequential disintermediation benefits for the firm. We measured beneficial and detrimental distribution share-shift. The former represents the customers shifting from a high-transaction-cost intermediated online channel (including Booking.com, Expedia.com, and all other online travel agencies) on their first visit, to zero-transaction-cost direct online channels (hotel website) on their second visit. The latter is the opposite direction shift (i.e., from a direct channel (hotel website) to an intermediated online channel). 4013 of the repeat guests used a high-transaction-cost intermediated online channel on their first visit and 1587 guests booked their first visit through the direct channel. Based on these two samples we evaluated the following two binomial regression models with logit link:

$$\mathrm{logit}(P(Direct_{ti}=1)) = \ln\left[\frac{P(Direct_{ti}=1)}{1-\ P(Direct_{ti}=1)}\right]$$
$$= \beta_1 + \beta_2(MyPage_{si}) + \beta_3(ADR_{ti}) + \beta_4(Quality_{ti}) + \beta_5(Superior_{ti}) + \beta_6(Basic_{ti}) + \beta_7(Adult_{ti}) + \beta_8(Children_{ti}),$$

$i = 1, \ldots, 4013.$

$$\mathrm{logit}(P(Indirect_{ti}=1)) = \ln\left[\frac{P(Indirect_{ti}=1)}{1-\ P(Indirect_{ti}=1)}\right]$$
$$= \beta_1 + \beta_2(MyPage_{si}) + \beta_3(ADR_{ti}) + \beta_4(Quality_{ti}) + \beta_5(Superior_{ti}) + \beta_6(Basic_{ti}) + \beta_7(Adult_{ti}) + \beta_8(Children_{ti}),$$

$i = 1, \ldots, 1587.$

Direct is a dummy variable where 0 indicates the use of an intermediated channel and 1 indicates a reservation made through HtlCo's own website. *Indirect* is a dummy variable where 0 indicates a reservation placed through HtlCo's own website and 1 indicates an intermediated reservation. *MyPage* represents whether the guest engaged in IT-enabled service personalization (1) or not (0). Control variables are defined as above and the subscripts t and s represent whether the variable refers to the first reservation (s) or the second one (t) in the ith reservation pairs (i.e., for both hypotheses we only measure personalization activity associated with the first reservation in the pair).

Our results show that the adoption of IT-enabled service personalization increases beneficial share-shift ($p < 0.001$). Specifically, the odds of transacting using the direct booking channel in their next stay are 61.3% higher for customers who experienced IT-enabled service personalization in their first visit than for customers who did not (Table 6). IT-enabled service personalization also decreases detrimental share-shift ($p = 0.013$). In the aggregate the odds for shifting to higher cost booking channels are 32.2% lower for customers who engage in IT-enabled service personalization in their first visit (Table 7). More specifically, Fig. 4 shows 23.21% of the customers who personalized through MyPage and booked through an intermediated online channel during the first visit would make the second reservation via HtlCo's own website. However, only 17.54% of the customers who did not use the MyPage service and booked through an intermediated online channel during the first visit would switch to HtlCo's own website to book the second visit. On the other hand, 13.91% of the customers who book through HtlCo's own website but did not use MyPage to personalize their stays during the first visit will switch to an intermediated online channel to make the second reservation. Only 9.56% of the customers who have used MyPage to personalize their stays will switch from the hotel's own website to an intermediated channel in the second visit.

5. Discussion

In this study we focus on customer service system design and its impact on individual and firm level outcomes in the lodging industry. Our investigation makes three contributions to IT-enabled service personalization theory and practice in general, as results might be generalized beyond the specific industry context. First, we demonstrate the positive role that signifiers play in IT design to improve customer preference elicitation during the learning phase of the service personalization process. Second, we measure the individual level impact of improved customer preference elicitation in terms of service and value assessments. Finally, we measure the firm-level impact of improved service personalization in terms of revenue share-shift and disintermediation.

Service processes are unique in that service is co-produced through the interaction of a customer and the firm (Vargo & Lusch, 2004). Thus they heavily depend on customer input (Sampson and Froehle, 2006). This characteristic of service is even more pronounced in the learning phase of the personalization process because preference elicitation is a sine *qua non* condition for successful implementation. Our findings show that IT-enabled customer service systems are superior to traditional systems in enabling customer preference elicitation. More specifically, they leverage the representation capability of IT to create appropriate signifiers that aid users in formulating and recording their preferences. This design results in preference elicitation from a larger proportion of customers, as well as a deeper level of personalization by each customer interested in tailoring the experience. On average, within the traditional personalization process, 34.47 reservations per month (SD = 19.52) yield a personalization request during the timeframe of our study. Conversely, the IT-enabled

Table 4
Hypothesis 2a: service.

Predictor	Coef.	Std. error	z-value	p-value	Odds ratio
Constant (Poor|Fair)	−4.417	0.244	−18.081	<0.001	
Constant (Fair|Good)	−2.326	0.181	−12.888	<0.001	
Constant (Good|Excellent)	0.140	0.172	0.815	0.415	
MyPage	0.192	0.070	2.718	0.007	1.211
ADR	−0.172	0.035	−4.777	<0.001	0.842
LOS	0.025	0.023	1.060	0.289	1.025
Room_quality	0.170	0.091	1.872	0.061	1.186
Roomtype_superior	0.330	0.115	2.861	0.004	1.391
Roomtype_basic	0.047	0.105	0.445	0.656	1.048
Adults	0.225	0.085	2.635	0.008	1.252
Children	0.127	0.124	1.021	0.307	1.135
PPrice	−0.006	0.011	−0.556	0.578	0.994

Table 5
Hypothesis 2b: value.

Predictor	Coef.	Std. error	z-value	p-value	Odds ratio
Constant (Poor|Fair)	−3.467	0.197	−17.614	<0.001	
Constant (Fair|Good)	−1.618	0.169	−9.589	<0.001	
Constant (Good|Excellent)	0.560	0.166	3.378	0.001	
MyPage	0.181	0.067	2.680	0.007	1.198
ADR	−0.389	0.035	−10.944	<0.001	0.678
LOS	−0.034	0.022	−1.570	0.117	0.966
Room_quality	0.268	0.087	3.065	0.002	1.307
RoomType_superior	0.471	0.110	4.283	0.000	1.602
RoomType_basic	0.068	0.101	0.667	0.505	1.070
Adults	0.328	0.082	4.000	0.000	1.389
Children	−0.062	0.118	−0.528	0.598	0.940
PPrice	−0.005	0.010	−0.439	0.661	0.995

Table 6
Hypothesis 3a: beneficial share-shift.

Predictor	Coef.	Std. error	z-value	p-value	Odds ratio
Intercept	−0.208	0.208	−8.821	<0.001	
MyPage	0.478	0.113	4.236	<0.001	1.613
ADR	0.035	0.051	0.678	0.498	1.035
Room_quality	0.570	0.152	3.759	<0.001	1.767
RoomType_superior	0.503	0.155	3.248	0.001	1.654
RoomType_basic	0.065	0.131	0.491	0.623	1.067
Adults	−0.450	0.115	−3.911	<0.001	0.637
Children	−0.216	0.222	−0.976	0.329	0.805

Table 7
Hypothesis 3b: detrimental share-shift.

Predictor	Coef.	Std. error	z-value	p-value	Odds ratio
Intercept	−1.203	0.291	−4.133	<0.001	
MyPage	−0.388	0.156	−2.493	0.013	0.678
ADR	0.217	0.071	3.046	0.002	1.242
Room_quality	−0.672	0.254	−2.647	0.008	0.511
RoomType_superior	−0.588	0.213	−2.755	0.006	0.555
RoomType_basic	0.521	0.180	2.903	0.004	1.684
Adults	0.022	0.169	0.133	0.894	1.023
Children	0.160	0.264	0.606	0.544	1.174

service personalization process yields 235.89 reservations per month (SD = 62.13) with a personalization request. Note that this effect is incremental, as it does not represent a shift or cannibalization from the traditional personalization channel to the IT-enabled system.

The IT-enabled service personalization process also yields a significantly larger number of item requests per stay. Specifically, we find that customers request an average of 1.07 items (SD = 0.07) through the traditional approach and 5.94 items (SD = 0.40) when doing so through the customer service system. These results are corroborated by a follow-up analysis on 349 stays where customers engaged in personalization with both the MyPage system and traditional personalization via email or phone call (for the same stay). The difference in the average number is statistically significant and in line with the rest of the analysis: 1.13 (SD = 0.42) for the traditional channel and 7.14 (SD = 3.64) for the IT-enabled channel respectively.

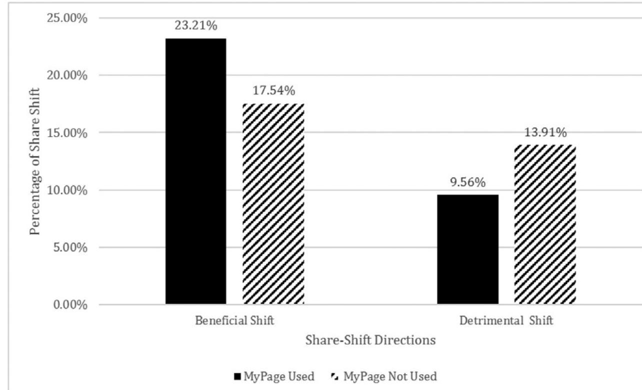

Fig. 4. Comparisons between beneficial share-shift and detrimental share-shift.

Taken together these findings provide strong evidence of the role of IT in improving the learning phase of the service personalization process. They contribute to IT-enabled customer service theory by demonstrating how CSS improve preference elicitation. We conjecture that those individuals who requested specific personalization using the traditional approach focus on items that are essential during their visit (e.g., an extra bed, baby crib, allergies to food or fabrics). Conversely, when given the opportunity to better clarify their preferences by way of an IT-enabled customer service system, individuals are empowered to express a more diverse set of preferences, including non-essential items (e.g., which drinks to stock the minibar with, extra towels or bathrobe, the temperature in the room upon arrival). We corroborate this explanation with a follow-up analysis of the specific items requested by customers. For the traditional approach to service personalization the highest relative frequency preferences are: extra bed (41.8%), special occasions[1] (12.8%), and baby crib (9.0%). These can be classified as requests that are critical for customers to enjoy their experience and account for 63.5% of all requested items. Conversely, the highest relative frequency preferences expressed via the customer service system are non-essential items: drinks (32.2%), pillow type (16.5%) and temperature (14.5%). They account for over 63% of all requested items. Moreover, these categories rarely appear in requests made via the traditional process: drinks (1.9%), pillow type (7.3%) and temperature (0.5%).

Taken together our findings confirm that service personalization affordance is not enough to elicit the range of humans' wide variety of inclinations — including latent preferences and unexpressed needs. Rather it requires the presence of appropriate signifiers that can provide customers with guidance and direction during the

[1] This category represents requests for particular considerations (e.g., nice view, king bed) due to the special private nature of the travelling reason — mostly wedding anniversaries. Special occasions address the main reason for travelling and are therefore critical to guests' satisfaction.

learning phase of the service personalization process. Without a customer service system to guide them during preference elicitation, individuals are, on average, less able to perceive the opportunity for personalization and specify their preferences. As a consequence, they tend to gravitate toward a small set of requests that are *critical* for a successful service experience. Using information technology, and specifically leveraging the representation and reach capabilities of IT, CSS designers can introduce signifiers that mitigate this problem. Note that IT-enabling the learning phase of the service personalization process is not simply tantamount to digitizing the existing process. Rather it is an example of mirroring capabilities (Rayport & Sviokla, 1995) that transforms preference elicitation. Without a CSS it is unfeasible for the hotel to easily present to customers a list of preferences, for their specific stay, and give them the ability to conveniently record and change those preferences at any time before their arrival. That is, once the set of preferences increase beyond a trivial number, it would be too difficult for customers to navigate them effectively without technology support (Bollen, Knijnenburg, Willemsen, & Graus, 2010). Moreover, the process would be perceived as cumbersome in relation to a simple purchase like a hotel stay, and therefore reduce overall customer value (Zeithaml, 1988).

From a methodological standpoint our results are important because they uncover a direct link between customer service system design and customer behavior in a field setting, rather than a lab environment. As such, they complement previous research on IT-enabled service personalization (Tam & Ho, 2006; Xu et al. 2014; Zhang et al., 2011). They make a strong case for the role of IT and customer service systems design in improving service personalization, demonstrating that an IT-enabled CSS is superior to a traditional approach to service personalization.

However, our results are by no means conclusive. Rather, they represent a first step in the research stream on effective customer service systems design for service personalization in the tourism industry. Many questions await further investigation. We did not have the opportunity to inform the system design or to enforce significant changes in customer behavior or the firm's usage of the system during our study. Thus, we could not investigate the competing effect of different CSS designs. Future research should delve deeper into the question of appropriate design. Specifically, both lab experiments and empirical field work should investigate what signifiers are best. Previous research has shown the existence of a tradeoff between efficiency and personalization in IT-enabled CSS design (Xu et al. 2014). The unified service theory proposes that the efficiency of a service process depends on the variability in customer inputs (Sampson and Froehle, 2006). Customers service systems designed to restrict users' input reduce variability and enhance efficiency. However, such redesign lowers the opportunities for service personalization (Xu et al. 2014). We theorize that it is possible to design customer service systems that balance these two seemingly conflicting objectives. In complex service personalization contexts (e.g., hospitality) many customers do not hold an a priori clear set of preferences. Our research suggests that the overwhelming majority of travelers do not realize the opportunity for personalization, despite extensive signaling from HtlCo. Thus, a CSS that enables user-initiated variability (Xu et al. 2014) may not properly elicit individual preferences. Conversely, appropriately leveraging the representation capability of IT the CSS designer can produce signifiers that prompt customers to express latent preferences. Corroboration of our field findings in a controlled environment where competing designs are investigated will contribute to conclusive answers, while enabling researchers to measure the ideal degree of task complexity (e.g., number and types of personalization options) and the optimal technologies for supporting the learning phase of the service personalization process. Another promising avenue for research is the evaluation of different interfaces for CSS. We have first-hand anecdotal evidence consistent with early findings that increasing use of mobile devices by customers requires a significant change in CSS design (Adipat, Zhang, & Zhou, 2011; Tesoriero, Gallud, Dolores Lozano, & Penichet, 2014). Signifiers that enable the elicitation of customer preferences on a website, such as the MyPage system, need to be dramatically redesigned when users access the CSS via a smartphone. This is an area that warrants future research attention.

While the in-depth study of CSS design is a key concern, in the context of the service personalization process, the ultimate goal of system design is to improve service perceptions while at the same time producing a positive financial return for the firm. Our choice of a field experiment allows us to empirically test the effect of IT-enabled service personalization on both stakeholders: the customer base and the hotel. Specifically, our study indicates that IT-enabled service personalization increases service and value ratings by users of the CSS. That is, those individuals who take advantage of the IT-enabled service personalization report greater satisfaction with the experience and higher evaluation of customer value than those who personalize their stay through traditional channels or do not personalize at all. Note that our focus is not on understanding how or why service personalization improves service and value perceptions. We rely on previous research for those explanations. Our research shows that preference elicitation through a CSS improves satisfaction and value perceptions. Thus, increasing the extent of preference elicitation in terms of number of users and number of requests per user expands the reach of its customer satisfaction efforts resulting in more guests who are more satisfied with the experience. This result has practical implications for the many managers in service organizations who hold the belief that information technology depersonalizes the relationship between their organizations and its customers. Conversely, our findings indicate that appropriately designed technology is instrumental in enabling a level of personalization that is unfeasible without customer service systems. As a consequence, the CSS acts as a magnifier of benefits for the customers, guiding them in the customization of their stay that yields a superior match of the experience with their expectations. This is a finding that has been theorized by IS scholars (Liang et al., 2012; Fung, 2008) but more empirical research is needed on the role of IT in organizational personalization efforts (Tam & Ho, 2006).

Finally, our work contributes to the call for a better understanding of IT-enabled service personalization by investigating the return on CSS investment from the standpoint of the firm. We show that IT-enabled service personalization benefits the HtlCo via revenue share-shift from intermediated to direct distribution channels, as well as contributing to the retention of direct transactions. To put the results in perspective, for a hotel like HtlCo with a $125 average daily rate, positive revenue share-shift from an intermediated channel (charging a 25% commission per night) results in an 18% increase in flow-through. This is a result with important theoretical and practical implications. It corroborates previous customer service systems literature proposing that IT-enabled tailoring of product and services increases differentiation and may enable the firm to foster direct relationships with customers (Becerra, Santaló, & Silva, 2013; Piccoli et al. 2004). Furthermore, since access to personalization functionalities is not restricted to direct bookings, HtlCo uses the CSS to extend the IT-enabled service personalization process to all prospective guests. Through IT-enabled service personalization, HtlCo is able to garner a greater share of direct bookings by converting customers who previously purchased from intermediaries into direct customers, while retaining those who chose the direct channel. This does not appear to be simply a change in magnitude of an original personalization process, but a change in the dynamics of the process. It is the establishment of an electronic relationship (O'Toole, 2003) with those individuals that adopt the IT-enabled service personalization process (Morgan-Thomas & Veloutsou, 2013) that creates the potential for significant share-shift. That is, the system design qualitatively changes the process of relationship building; it doesn't simply "scale up" existing dynamics. Personalization can induce desired emotions and improve affective feelings toward a service provider (Liang et al., 2012; Sarri, Ravaja, Laarni, Turpeinen, & Kallinen, 2004), as well as enhanced trust and loyalty (Ball et al. 2006). While our work only shows that improved customer preference elicitation does benefit the hotel financially, it suggests that this improvement occurs through improved relationships between the hotel and the customer. Future work building on our early findings should explore the underlying reasons for the relationship change. We speculate that those customers who have experienced the hotel's ability to deliver a superior match with their service expectations have developed stronger trust in the provider and are therefore less willing to rely on an intermediary in the future.

6. Limitations and conclusion

Using an archival data set from a real organization, our study has some limitations that should be noted when interpreting the results. The service and value assessment measures we adopt are single-item measures because the nature of our archival dataset did not allow us to adopt a multi-item scale. While we believe that our measures are adequate for the purpose of this study, future research in a controlled environment should adopt a more reliable measure of satisfaction.

Despite its limitations we submit that our work contributes to the advancement and refinement of the IT-enabled service personalization literature in tourism. Customer service provision is both influenced and challenged by the continuous evolution of customers' service expectations and the introduction of increasingly personal technology such as smartphones and wearable devices. We believe that information systems scholars, with their deep understanding of information technology and the complex relationship between technical objects and their user, should and will remain at the forefront of research in customer service systems design.

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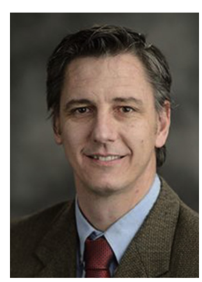

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